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**BEYOND AFFECTIVE VALENCE:
THE EFFECT OF DIFFERENT EMOTIONS ON COGNITIVE
PROCESSING AND PERSUASION FROM A CERTAINTY-
CONGRUENT APPROACH**

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by

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Dedication

To my family

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This research investigates the role of emotion in the persuasion process by establishing a novel relationship between emotion and construal level. Built on cognitive appraisal theories, this research proposes that the certainty appraisal components of emotions exert a direct influence on an individual's representation of information at a high versus low construal level.

The findings indicate that individuals primed to feel emotion low on certainty appraisals construe behaviors or events at a high level and estimate uncertain events as more likely to happen, while those primed to feel emotion high on certainty appraisals characterize behavior or events at a low level and evaluate uncertain events as less likely to occur (Study 1 & Study 2). Further, such a fit (vs. nonfit) between an individual's

emotional state and the construal level at which product benefits in an advertising message are represented lead to a more favorable evaluation of the message and product (Study 3). The findings from this dissertation study also illustrate that uncertainty-related emotion eliciting a high-level construal mindset leads to a cognitive shift toward relying more on nonalignable attribute differences and a greater preference for the nonalignable-better brand although individuals usually rely more on alignable attribute differences and favor the alignable-better brand (Study 4). Accordingly, these outcomes occur because the certainty appraisal components of emotions influence mental construal levels.

Table of Contents

List of Tables	xiv
List of Figures	xvi
Chapter 1: Introduction	1
Chapter 2: Literature Review	10
Definitions of Terms	10
Affective States and Effects	13
Affect's Impact on Capacity, Accessibility	14
Affect as Information	17
Affect as Motivation	18
Limitations of Valence-based Approaches	21
Definition of Cognitive-Appraisals	23
Cognitive-Appraisal Dimensions & Emotions	24
Different Emotions and Different Effects	28
Certainty & Congruent Effects	30

Construal Level Theory	32
Desirability vs. Feasibility	34
Alignable vs. Nonalignable Differences	35
Certainty and Construal Levels	36
Chapter 3: Research Question and Hypotheses	39
Chapter 4: Experiments	48
Overview of the Experiments	48
Study 1	49
Overview	49
Experiment Design	49
Subjects	50
Procedure	51
Manipulation	53
Measures	54
Results	56

Manipulation Check.....	56
Hypothesis Testing.....	57
Discussion.....	59
Study 2.....	62
Overview.....	62
Pretest I: Emotion-Inducing News Stories.....	62
Main Experiment Design.....	66
Subjects.....	66
Procedure.....	67
Measures.....	70
Results.....	70
Manipulation Check.....	71
Hypothesis Testing.....	73
Discussion.....	75
Study 3.....	77

Overview	77
Pretest II: Product Selection.....	78
Pretest III: Choice of Advertising Messages	79
Main Experiment Design	84
Subjects	84
Procedure	85
Measures	86
Results.....	88
Manipulation Check.....	88
Hypothesis Testing.....	91
Discussion	94
Study 4	96
Overview.....	96
Pretest IV: Product Attributes	97
Pretest V: Alignable & Nonalignable Attributes	98

Pretest VI: Choice of Two Ad Messages	100
Main Experiment Design	102
Subjects	102
Procedure	103
Measures	104
Results.....	105
Manipulation Check.....	105
Hypothesis Testing.....	107
Discussion	109
Chapter 5: Discussion and Conclusion	111
General Discussion	111
Contributions	115
Theoretical Contributions	115
Managerial Implications	118
Limitations & Future Research.....	120

Appendix A: Emotion Induction Questions & Stimuli.....	122
Appendix B: Measurement Scales for Study 1-4.....	129
References.....	141

List of Tables

Table 4.1: Sample Demographics from Study 1	51
Table 4.2: Differences in Means for the Likelihood Estimates	59
Table 4.3: News Stories and Emotion Index Scores	65
Table 4.4: Sample Demographics from Study 2	67
Table 4.5: News Stories & Emotion Induction	72
Table 4.6: Differences in Means for the BIF Scores in Study 2	74
Table 4.7: Differences in Means for the Likelihood Estimate Measure in Study 275	
Table 4.8: Product Familiarity	79
Table 4.9: Sample Demographics from Study 3	85
Table 4.10: Correlations between Dependent Variables and Covariates	92
Table 4.11: Univariate Analysis of Variance Results from Study 3	93
Table 4.12: Cell Means and Sample Sizes	94
Table 4.13: Product Attributes and Importance Ratings	98
Table 4.14: Common, Alignable, and Nonalignable Attributes	99
Table 4.15: Differences in Perceived Importance between Product Attributes ...	100

Table 4.16: Sample Demographics from Study 4	103
Table 4.17: Attitudes toward the Two Ads	108

List of Figures

Figure 4.1: BIF Scores	58
Figure 4.2: High-level Construal Ad for Study 3	80
Figure 4.3: Low-level Construal Ad for Study 3	81
Figure 4.4: Ad Stimuli for Study 4	101

Chapter 1: Introduction

How does emotion come to influence a consumer's response to an advertising message? The role of emotion in the persuasion process has been an important inquiry in advertising research. A wealth of literature has documented that the emotion of message recipients exerts an influence on their message processing and judgment in a systematic rather than an irrational manner (Batra and Ray 1986; Cohen, Pham, and Andrade, 2008; Holbrook and Batra, 1987; Hullett, 2005). The majority of the research studies on the impact of emotions on advertising evaluation have been rooted in the valence-based framework contrasting the differential impacts of positive versus negative emotion. The research findings within the valence-based framework suggest that different feelings of the same valence exert similar influences on cognitive processing and judgment (Mackie and Worth, 1989). However, this approach is not without criticism.

An increasing number of researchers have questioned the assumption that all positive and all negative emotions are equal and lead to similar effects on message processing and judgment (e.g., Babin, Darden, and Barbin, 1998; Bodenhausen, Sheppard, and Kramer, 1994; DeSteno et al., 2000; Lerner and Keltner 2001; Raghunathan and Pham, 1999; Tiedens and Linton, 2001). The central idea behind this research stream is that isolable emotions can be distinctively identifiable because individuals experience specific emotions based on their evaluations and interpretations of emotion-related events (Arnold, 1960; Frijda, 1993; Lazarus, 1991; Roseman, 1984; Smith and Ellsworth, 1985,

1987). From this more appraisal-focused perspective, hope and happiness, both positive in valence, differ notably on various cognitive appraisals such as certainty, expectedness, importance, and controllability (e.g., Roseman, Wiest, and Swartz, 1994; Smith and Ellsworth, 1985).

Furthermore, a growing body of evidence within this appraisal framework shows that different emotions of the same global valence exert distinct influences on subsequent cognitive processing, judgment, and behavior (e.g., DeSteno et al., 2000; Lerner and Keltner, 2001; Raghunathan and Pham, 1999; Tiedens and Linton, 2001). For instance, DeSteno et al. (2000) showed that sadness and anger, which are distinct but negative, have a different influence on likelihood estimates in an emotion-specific manner. In particular, sad individuals believe that sad events are more likely to occur than angering ones, whereas angry individuals believe angering events to be more likely than sad ones (DeSteno et al., 2000). In addition, Raghunathan and Pham (1999) found that individuals primed to feel anxious pursue uncertainty reduction and favor a low-risk/low-reward option, whereas individuals primed to feel sad seek reward replacement and favor a high-risk/high-reward option. These research results clearly indicate that different emotions of the same valence can have a different impact on cognitive processing, judgment, and choice.

In line with this research approach, a recent stream of research has also investigated the effects of different emotions of the same global valence on the

processing of advertising messages (e.g., Faseur and Geuens, 2006; Griskevicius et al., 2009; Yan, Dillard, and Shen, 2012). The research findings have consistently identified that different emotions of the same valence have different impacts on consumers' responses to advertising messages in an emotion-specific way. Nevertheless, important questions still remain about whether and how consumers in specific emotional states encode and evaluate advertising messages featuring product attributes and related benefits in general and abstract versus specific and concrete ways.

Previous research efforts on the persuasive effects of emotions have employed the dual-processing framework, suggesting that individuals in a negative emotion engage in more systematic and elaborative processing, whereas those in a positive emotion engage in heuristic processing due to deficits in motivation and ability (Bohner et al, 1992; Mackie and Worth, 1989). However, the research findings within the dual-processing framework do not provide appropriate explanations about the effects of emotions on consumer evaluations of advertising messages featuring product benefits and attributes in different ways.

Specifically, some advertising messages may focus on desired end states consumers arrive in by using the advertised products, but other advertising messages may put a more functional emphasis on feasible attributes the advertised products provide (Lee, Keller, and Sternthal, 2010; Trope and Liberman, 2010). For instance, an ad message for an elliptical trainer can focus on health benefits (e.g., heart healthy,

cardiovascular conditioning, bone strengthening, and lung capacity) while another advertising message may describe how specific features work for helping burn calories (e.g., 7 workout programs to keep you challenged, grip heart rate monitor). Further, in a comparative advertising context, ad appeals can include features that are comparable along the same dimension (i.e., alignable differences) while other appeals may focus on unique features of the advertised brands that do not correspond with those of competing brands (i.e., nonalignable differences) (Zhang and Markman 1998). For instance, an ad message for a vacuum cleaner may highlight different but comparable attributes (e.g., 2.5L vs. 2.25L dust collection capacity), whereas, another message for a competing cleaner may emphasize unique and non-comparable attributes (e.g., fingertip power switch vs. automatic height adjustment). To date, few research efforts in the field of advertising have identified emotional states in which each of these message strategies is likely to be effective.

At its core, this dissertation, therefore, begins with the question: Do isolable emotions of the same global valence have differential impacts on consumers' responses to advertising messages presenting product benefits and attributes at different levels? To investigate whether (and how) emotions exert different influences on the processing of advertising messages, this research manipulates emotional states rather than measuring chronic tendencies to experience them. In addition, these scenarios of advertising message framing illustrated above are associated with the two distinct mental

representations highlighted in construal level theory (Liberman and Trope, 1998; Trope and Liberman, 2010; Trope, Liberman, and Wakslak, 2007). Construal level theory basically states that people's mental representations of stimuli that are psychologically near to the self are often low-level and concrete while representation of stimuli that are psychologically distant from the self are often high-level and abstract (Liberman and Trope, 1998; Trope, Liberman, and Wakslak, 2007). High-level construal is defined as leading to mental representations that are relatively more abstract, coherent, and superordinate compared with low-level construals (Trope and Liberman, 2010). Furthermore, individuals primed to have a low-construal mindset evaluate uncertain, psychologically remote events as less likely to occur whereas, those primed to have a high-construal mindset estimate these uncertain and remote events as more likely to happen (Todorov, Goren, and Trope, 2007; Trope and Liberman, 2010)

The principles of construal level theory seem to be important to consider in the context of advertising and consumer choice because distinct mental representations at different levels provide insight into how certain advertising messages are effective (c.f., Dhar and Kim, 2007; Lee, Keller, and Sternthal, 2010). High-level construals are linked to the desirability of an event or object and are associated with why certain things are done, whereas low-level construals are concerned with the feasibility of the event or object and thus pertain to how certain things are done (Lee, Keller, and Sternthal, 2010; Trope and Liberman, 2010; Trope, Liberman, and Wakslak, 2007).

In this regard, advertising messages can be construed in terms of either why the advertised product is purchased or how it is helpful in pursuing imminent and proximal consumption goals (Lee, Keller, and Sternthal, 2010; Trope and Liberman, 2010).

Viewed from this perspective, descriptions of elliptical trainers at a high-construal level ensure health benefits by using them. In contrast, how specific functional features work represent low-level construal.

Further, high-level construal rather than low-level construal makes it possible to compare non-comparable features because making non-comparable features comparable needs to represent them in terms of more abstract attributes (Malkoc, Zauberma, and Bettman 2010; Malkoc, Zauberma, and Ulu, 2005; Trope and Liberman, 2010).

Comparing a vacuum cleaner with a fingertip power switch and another with automatic height adjustment requires individuals to represent these features at a higher level in terms of convenience.

Accordingly, this dissertation aims to accomplish three goals: 1) it establishes a theoretical framework that can explain the impacts of different emotions on mental construal levels 2) it also accounts for the effects on persuasion from matching emotional states and advertising messages that frame product benefits either at a more concrete or a more abstract construal level 3) it develops a mechanism explaining the effects of emotions on the cognitive shift toward relying more on nonalignable differences in a comparative advertising context. Toward this end, this dissertation specifically focuses on

the dimensions of certainty in classifying emotions beyond valence and investigating the effects of specific emotions on consumer evaluations of advertising messages construed at different levels for four reasons.

First, the certainty dimension has been identified as an important one among the different cognitive appraisal dimensions developed by prior research (e.g., Roseman, 1984, Frijda, 1987; Smith and Ellsworth, 1985). Second, various research studies indicate that certainty exerts a direct influence on cognitive processing and judgments (e.g., Festinger, 1954; Kelley, 1973; Pelham and Wachsmuth, 1995; Weary and Jacobson, 1997). Third, recent research also found that emotions characterized as certainty (vs. uncertainty), regardless of their valence, influence an individual's cognitive processing and judgment in a congruent manner (Tiedens and Linton, 2001). Fourth, according to recent construal level theory, one of the four factors determining levels of mental representations of events or objects is certainty (Trope and Liberman, 2010; Wakslak, et al. 2006). In particular, decreasing an event's certainty allows individuals to represent the event in a more high-level and abstract manner with a focus on the general features of the event, while increasing an event's certainty leads individuals to characterize the event in a more low-level and concrete way with an emphasis on the specific features of the event (Trope and Liberman, 2010; Wakslak, et al. 2006).

This dissertation hypothesizes that, regardless of their valence, the certainty appraisal content of emotions exerts an influence on the individual's construal level. In

particular, the current investigation predicts that individuals feeling uncertainty-related emotions represent events or behaviors at a higher level and evaluate uncertain events as more likely to occur than those individuals feeling certainty-related emotions.

Specifically, Study 1 focuses the hypothesized relationship between certainty appraisals and construal levels and the effects of emotions on likelihood judgments about uncertain events using four emotional states (i.e., happiness, anger, hope, fear). Study 2 retests the predicted relationship and the effects of emotions on likelihood estimates with a more refined emotion-induction technique

Further, based on the hypothesized relationship between emotions and construal levels, this dissertation research predicts that individuals induced with certainty-related emotions tend to be more persuaded by an ad message representing feasible attributes than an ad message emphasizing desirable benefits, while this effect is reversed for those induced with uncertainty-related emotions. Study 3 directly explores this prediction, inducing four emotional states and manipulating construal level in an ad message describing an elliptical trainer brand in terms of feasibility or desirability. Lastly, this study hypothesizes that uncertainty-related emotions lead individuals to evaluate a nonalignable-better brand and its ad message more favorably than an alignable-better brand and its ad message in a comparative advertising context. Study 4 examines a cognitive shift toward relying more on nonalignable differences in a comparative advertising context for vacuum cleaners.

This dissertation intends to contribute to advertising and consumer psychology literature on several fronts. First, this dissertation extends the theoretical framework of emotion and cognition via introducing construal levels. Second, it provides salient evidence showing that different emotions of the same valence can exert a distinctive effect on subsequent cognitive representations of stimuli and judgments. The findings add depth to our knowledge of the relationship between emotions and cognitive mechanisms. As a result, we might better understand the effect of emotional states on subsequent cognitive processing, judgment, and behavioral intention. Third, from a priming perspective, this dissertation shows how individuals' emotional states have an influence on the interpretations of advertising messages. In addition, the findings point to how advertisers should develop their advertising strategies in terms of the relationship between consumers' emotional states and address practical implications for marketers and advertisers.

The remainder of this dissertation is organized as follows: Chapter 2 provides a broad theoretical background on emotions, their effect on cognitive processing and mental construal level. Chapter 3 offers review of related research that directs to the hypotheses and research question of this dissertation study. Chapter 4 involves the four experimental studies described above. Chapter 5 provides the overall discussion for this set of studies, theoretical contributions, managerial implications, and limitations and recommendations for future research.

Chapter 2: Literature Review

This chapter will discuss, first, the definitions of affect, emotion, and mood. Because those important terms have been used interchangeably in the literature, this section clearly defines each term and distinguishes them from one another. The second section of this literature will review the research findings of previous research efforts on affective effects. Given that this dissertation emphasizes the importance of diverse emotions beyond mere valence, the third section will review research studies with regard to cognitive-appraisal dimensions distinguishing emotions from one another. Further, research on the certainty dimension and certainty-congruent effect will be discussed. The final section of this literature review discusses about construal level theory and reviews how perceived certainty exerts an influence on levels of mental representation.

DEFINITIONS OF TERMS

There is little universal agreement about how best to define the terms affect, emotions, and mood (Fiedler, 1988; Frijda, 1986). Some scholars have used these terms interchangeably, yet a closer look reveals the terms to be distinct concepts, each with distinctive effects on consumer behavior (Bagozzi, Gopinath, and Nyer, 1999; Forgas, 1995). This dissertation focuses on emotions, which are categorized by cognitive appraisals and exert a significant influence on subsequent cognitive processing, judgment, and behavior; however, this section seeks to distinguish emotion from affect and mood for the sake of conceptual clarity.

The term “affect” is, in essence, defined as an umbrella term describing internal feeling states that include moods, emotions, and related mental states (Bagozzi, Gopinath, and Nyer, 1999; Cohen and Areni, 1991). Russell and Carroll (1999) define affect as “genuine subjective feelings and moods” (p. 3). They also indicate that “affect” is distinguished from an evaluative judgment toward objects and events. In this regard, the term affect refers to the internal feeling state. An evaluative judgment – an individual’s explicit or implicit liking for some object, person, or position – is distinct from, but likely influenced by, that internal feeling state. Therefore, this dissertation regards affect as a general category for mental feeling processes (the internal feeling state) rather than a particular psychological process.

Moods are a subcategory of affect and are conceptualized most often as “low intensity and diffuse affective states that generally lack source identification” (Cohen, Pham, and Andrade, 2008, p. 299). Individuals prompted by internal body activities or external stimuli experience a vague sense of feeling good or bad without necessarily knowing quite why (Cohen, Pham, and Andrade, 2008). That is, when an individual is in a specific mood state, he or she is less likely to recognize the actual source of the state. It is also important to note that the same individual can experience different mood states depending on different contexts and these mood states are considered state-bound (Gardner, 1985). In this regard, mood states tend to guide self-regulatory responses in a less intentional way (Bagozzi, Gopinath, and Nyer, 1999).

The term “emotion” is viewed as a feeling state of readiness that results from cognitive appraisals of events or thoughts (Frijda, 1993; Lazarus, 1991). Compared to moods, emotions are much more differentiated and hence provide more attitude- and behavior-specific information (Cohen, Pham, and Andrade, 2008). Therefore, emotion is more likely than mood to be directly coupled with action tendencies and explicit actions (Frijda, 1993). The appraisal process that leads to emotion is based on antecedent motivational variables that interact with a set of environmental demands, constraints, and resources (Lazarus, 1991).

Emotions act as a link between events in the environment and individuals’ responses (Bagozzi, Gopinath, and Nyer, 1999). The emotions individuals experience in their lives strongly influence how they act in response to events and situations (Frederickson and Branigan 2005; Frijda, 2005; Siemer, Mauss, and Gross, 2007). Emotions promote learning that will help people make appropriate responses in the future (Siemer, Mauss, and Gross, 2007). Accordingly, emotions play an important role in generating distinct behavioral patterns relevant to a particular kind of significant events or situations.

In recent decades, different approaches have been developed to account for the effects of affect states on cognitive processing, judgment, and behavior. The next section reviews different explanations about the effects of affect states. Although this dissertation will apply the term emotion in its research questions, the literature review below builds

on the existing scholarship, which uses emotion and mood interchangeably and does not put forth a universal consensus about the distinction between the two terms. The emphasis below, therefore, is on the integrative term affect.

AFFECTIVE STATES AND EFFECTS

In recent decades, an extensive body of research has explored the effects of affective states from different approaches. The majority of research on affective effects has presumed the influential importance of affect states at the time of processing (Cohen, Pham, and Andrade, 2008). This body of research has typically induced positive affective states as happy and negative affective states as sad and looked at how those states related to processing (Hullett, 2005). The focus tends to be on contrasting the differential effects of positive and negative states (Hullett, 2005). Despite the limitations of the valence-based approach, which are detailed further below, these research findings do provide a baseline understanding about how affect states are linked to cognitive processing, as well as judgment and behavior.

At an aggregate level, it is possible to divide the explanations of affective effects into three groups: capacity, information, and motivation. Capacity and informational explanations presume that an individual's affect state at a single point in time has an influence on processing, judgment, and eventually behavior. Motivational explanations assume that an individual's projected discrepancy between affect states at two points in time results in the motivational property of affect and, therefore, plays the major role in

guiding cognitive or behavioral activities (c.f., affect management theory, Zillmann, 1988; affect maintenance hypothesis, Clark and Isen, 1982).

Affect's Impact on Capacity, Accessibility

The basic explanation for the capacity approach is the differential accessibility of distinctive materials in associative working memory under positive versus negative affective states (Isen, 2008). From this perspective, positive affect produces a situation in which a considerable amount of materials are activated in working memory (Isen, 1984; Mackie and Worth, 1989). Capacity theorists have suggested that the presence of activated and preactivated materials in working memory provides both a complex and distracting cognitive context in terms of which incoming information must be interpreted (e.g., Mackie and Worth, 1991). Therefore, it has been suggested that compared to negative affect, positive affect is associated with more conceptual nodes in working memory and creates a state of greater cognitive busyness (e.g., Isen, 2008; Mackie and Worth, 1991).

Within the capacity framework, the simultaneous accessibility of cognitive materials in working memory tends to broaden or make diffuse the focus of attention, leading to a continual allocation and reallocation of processing capacity (Isen, 2008). According to Mackie and Worth (1991), individuals in positive affect tend to reduce the cognitive capacity available for information processing and are unable to maintain the cognitive and attentional focus that is demanded by extensive and elaborate processing

(Isen, 1984, 2008; Mackie and Worth 1991). From the viewpoint of capacity theorists, it is difficult for individuals in positive affect to focus attention on tasks that require sequential or analytic processing.

In addition, capacity theorists explain that positive affect decreases systematic processing for motivational reasons related to the subjective experience of being in a positive affective state (Mackie and Worth, 1991). Some empirical investigations using this approach show that the use of heuristic processing strategies provide an effective means for people in positive affective states (i.e. happy) to avoid complex processing and maintain their positive affect because extensive thinking about complex problems can be both effortful and stressful (Isen, 2008). Therefore, capacity theorists suggest that individuals are motivated to maintain this positive state, selectively engaging in cognitive processing activities that threaten to destroy it (Isen, 2008; Isen and Levin, 1972; Isen and Simmons, 1978). From this perspective, the use of judgment heuristics by people in a positive affect reflects a lack of desire to process extensively (Mackie and Worth, 1991).

Within the capacity framework, affective states exert an influence on subsequent cognitive processing and judgment in a valence-congruent manner. That is, positive affect is expected to lead to a more favorable evaluation of the environment, while negative affect is expected to lead to a less favorable evaluation of the environment (Bower, 1981; Isen, 2008). In a pioneering study, Axelrod (1963) observed that, after viewing a depressing television documentary, consumers evaluated a variety of products

more negatively than they did before they saw the documentary. These shifts in evaluation were found to be directly related to changes in participants' affective states. Through two experimental studies, Isen and her colleagues (1978) found that compared to control subjects, subjects who were put in a positive state through a small gift and false success feedback were more willing to participate in a survey and evaluated products more favorably, respectively.

In the advertising context, research studies have shown that emotional states elicited by TV shows, magazines, and music generally has a congruent influence on consumers' evaluations of the ad but less influence on their evaluations of the advertised brand (e.g., Gardner and Wilhelm, 1987; Goldberg and Gorn, 1987; Mathur and Chattopadhyay, 1991; Murry and Dacin, 1996; Yi, 1990). For instance, Gorn (1982) found that people who had seen a pen advertised while pleasant music from the movie "Grease" was playing in the background were more likely to choose this pen than people who had seen the same pen advertised while classical Indian music which served as unpleasant music was playing in the background. Furthermore, Raghunathan and Irwin (2001) found that even the mere action of browsing a series of attractive options may elevate a consumer's affect and result in congruent effects on subsequent evaluations.

Capacity explanations focus on contrasting the influential effects of a positive affective state and a negative affective state and highlight the congruency between affective states and their subsequent effects. The congruent effects may be applied to

investigating the different effects of specific affective states of the same valence (e.g., fear and anger).

Affect as Information

The basic assumption of informational explanations is that affect states may inform the individual about the nature of the current situation (Frijda, 1988; Schwarz and Clore, 1983). Linking these states from cognition to judgment, informational explanations posit that people use their emotional states as signals about the current situation or about the quality of their judgment. From this perspective, individuals usually feel good in situations that are characterized by positive outcomes and/or in situations that do not threaten their current goals. In contrast, individuals usually feel bad in situations that threaten their current goals, because of the presence of negative outcomes or the lack of positive outcomes (Schwarz and Clore, 1996).

Within the informational explanations, the ‘affect-as-information’ approach argues that the experience of negative affect indicates to the individual a threat to the achievement of desired goals; in those experiences, the situation calls for systematic and attentive processing (Bless, 2000; Bless et al., 1996; Schwarz, 1990; Schwarz and Clore, 1983). This approach also suggests that positive affect signals that the situation is safe and general, easily accessible knowledge constructs are a sufficient basis for judgment (Bless, 2000; Bless et al., 1996; Schwarz, 1990; Schwarz and Clore, 1983). On the other hand, the ‘affect-as-input’ approach contends that positive affect signals that one has

sufficient information to make a judgment. Thus, when an individual's goal is making an accurate judgment, the person will look to his or her affect as an indicator of whether he or she knows enough (Hirt et al., 1996; Martin et al., 1997; Martin et al., 1993).

Within the informational explanations, there are two opposing arguments about the stage in which affect exerts an influence on evaluation stages. For example, Schwarz and Clore (1988, 1996) contend that affective states are assumed to enter into judgments during the formal evaluation stages. In contrast, recent findings suggest that the informative influence of affect states may take place earlier in the process, during an initial evaluation of the object or the situation (Yeung and Wyer, 2004). These findings indicate that affect is able to influence ways of cognitive processing as a determinant.

Of importance in informational explanations is the relationship between affect and perceptions of one's current situation, and the differential impact of positive and negative affect on those perceptions. However, recent research has extended the research focus to different affective states within the same valence (e.g. two distinct positive states), and how those states differentially influence people's perceptions of current situations, particularly in terms of certainty and attention (Roseman, 1984, Smith and Ellsworth, 1985, Tiedens and Linton, 2001). This dissertation seeks to build on this nascent research, as will be described in later sections and in Chapter 3.

Affect as Motivation

Motivational explanations (e.g., Clark and Isen, 1982; Zillmann, 1988) presume that people intuitively strive to arrive in a positive affect state when feeling bad, and then protect it once the desired state has been achieved (Bower, 1981; Fiedler et al., 2003; Forgas and Bower, 1987; Wegener and Petty, 1994; Wegener, Petty, and Smith, 1995). Compared to capacity and informational explanations, motivational explanations argue that individuals separately assess their current affective state and forecast the affective consequences which are likely to be produced by the subsequent behaviors and judgments (Bower, 1981; Fiedler et al., 2003; Forgas and Bower, 1987; Pham, 2004).

According to the motivational explanations, individuals use the affective discrepancy between the two affective states (current and forecast) as a judgment criterion and decide their behavioral or cognitive strategies in order to maintain and arrive at a positive affective state (Erber and Erber, 2000; Erber, Wegner, and Theriault, 1996; Pham, 2004). In particular, individuals in a positive affective state tend to respond to external situations and stimuli through their internal mental structures. This is because positive affect provides individuals with the resources and self-confidence that allow them to engage in spontaneous cognition and focus internally in the process of determining behavior (Fiedler, 1995, 2001; Ruder and Bless, 2003). In contrast, when individuals are in a negative state, they are more likely to interact with external situations and stimuli (Fiedler, 2001). That is, individuals in a negative affective state turn some attention outward and begin modifying their internal mental structures and develop

cognitive and behavioral strategies in order to cope with or respond to externally determined rules and social conventions. Accordingly, researchers contend that the two different affective states work distinctively as drivers of cognitive and behavioral strategies (Ruder and Bless, 2003).

Furthermore, an individual's affective regulation strategy can vary according to task characteristics and levels of cognitive resource availability. For instance, Martin et al. (1993) found that participants in a negative state worked longer than those in a positive state when the task instruction was to keep working until satisfied with the performance. However, when instructed to keep working until they no longer enjoyed the task, the effect reversed: respondents in a negative state stopped sooner than those in a positive state (Martin et al., 1993). These results illustrate that the same affective state can have very different interpretations depending on the question that people are asking themselves (Martin et al., 1993). The effects of affective states also can be enhanced under conditions of reduced processing capacity (Siemer and Reisenzein, 1998). As cognitive resources become depleted, individuals intentionally control their cognitive resources and processing capacities (Siemer and Reisenzein, 1998).

In summary, the motivational explanations mostly focus on how people use different coping strategies according to positive versus negative states in order to maintain their positive affective state and avoid negative affective states. In this respect, the motivational explanations provide insights into how individuals' current affective

states exert an influence on their perceptions of current situations, and on how they develop coping strategies on the basis of expected affective states and situations.

LIMITATIONS OF VALENCE-BASED APPROACHES

Based on the three explanations outlined above, empirical research on the effects of affective states has focused heavily on exploring the differential impacts of positive versus negative affect on the degree and depth of cognitive processing (Hullett, 2005). These empirical efforts primarily is based on the assumption that all negative and all positive emotions would lead to similar effects on judgment and decision-making. Accordingly, it has been suggested that positive affect is significantly associated with heuristic processing strategies, whereas negative affect drives individuals to use systematic and elaborative processing strategies (Batra and Stayman, 1990; Bless et al., 1990; Böhner, Moskowitz, and Chaiken, 1995; Mackie, Asuncion, and Rosselli, 1992; Mackie and Worth, 1989, 1991; Murray et al., 1990; Schwarz, Bless, and Böhner, 1991; Sinclair, 1988; Sinclair and Mark, 1992; Worth and Mackie, 1987).

It is argued that, because individuals in a positive affective state (i.e., happy) tend to employ heuristic or peripheral processing, these individuals rely on global knowledge structures and internal cues when evaluating messages and arriving at judgments (Bless et al., 1996; Bodenhausen, Kramer, and Suesser, 1994). On the other hand, individuals in a negative affective state (i.e., sad) use a more systematic, data-driven, and analytical form of processing when they evaluate persuasive messages and make judgments about the

argument in the messages (Hullet 2005). Thus, it has been widely accepted that positive affect generally decreases the depth with which individuals process substantive information in persuasion and attitude formation, whereas negative affect increases the care with which individuals process substantive information in persuasion (Batra and Stayman, 1990; Bless et al., 1990; Bless, Mackie, and Schwarz, 1992; Mackie and Worth, 1989; Worth and Mackie, 1987).

As described earlier, the majority of research on affective effects has focused on contrasting the differential impacts between positive and negative affect. However, it is not conceptually accurate to consider emotions as containing only affective valence information ranging from negative to positive feelings. Further, these valence-based approaches fail to rigorously explain the nature of emotional responses in many different contexts (Bagozzi, Gopinath, and Nyer, 1999). An increasing number of research findings have noted that an array of distinct affective states within the same valence can be differentiated. Research suggests that negative emotion includes an array of distinct states ranging from sad, angry, fearful, disgusted and beyond (Frijda, 1993; Smith and Ellsworth, 1985), which implies qualitative differences in the experience beyond mere affective valence.

Indeed, a recent stream of research on affective effects shows that different affective states of the same valence (e.g., fear, anger, sadness) exert a different influence on subsequent cognitive processing, judgment, and behavior (e.g., Lerner and Keltner,

2000, 2001; Lerner, Small, and Loewenstein, 2004; Raghunathan and Pham, 1999; Raghunathan, Pham, and Corfman, 2006; Tiedens and Linton, 2001). The central idea behind this stream of research is that there are qualitative differences in affective states (Tiedens and Linton, 2001). This stream of research has identified cognitive-appraisal dimensions as key to understanding these qualitative differences (Green and Sedikides, 1999; Lerner and Keltner, 2000; Raghunathan and Pham, 1999; Tiedens and Linton, 2001). In the following section, the definition of cognitive appraisal and related appraisal dimensions are discussed.

DEFINITION OF COGNITIVE-APPRAISALS

Cognitive appraisal theories arose from acknowledging the lack of an overarching theory capable of thoroughly differentiating a wide array of emotions beyond valence and explaining their different effects (e.g., Roseman 1984; Smith and Ellsworth, 1985). These appraisal approaches intend to construct the mechanism explaining why certain situations and experiences lead to specific emotional responses. Appraisal theorists posit that emotions result from cognitive activities such as processing, or evaluating personally relevant information (e.g., Frijda, Kuipers, and ter Schure, 1989; Roseman, 1984; Smith and Ellsworth 1985). Evaluations and interpretations of events, rather than events per se, determine whether a specific emotion will be felt (Frijda 1986; Roseman 1984; Smith and Ellsworth 1985; Smith and Lazarus 1993).

Appraisal is, thus, defined “as an evaluation of what one’s relationship to the

environment implies for personal well-being” (Smith and Lazarus, 1993, p. 234) and specific emotions vary in terms of cognitive appraisals (Roseman, Spindel, and Jose, 1990; Smith and Lazarus, 1993). From a cognitive appraisal perspective, different emotional states can be distinguished on the basis of which appraisal components are involved and how they are involved (Frijda, Kuipers, and ter Schure, 1993; Smith and Ellsworth, 1985; Ellsworth and Smith, 1988). That is, the different combinations of these cognitive appraisals elicit different emotions.

For instance, guilt, anxiety, and sadness are all negative emotions, but they differ in terms of other appraisal components; guilt involves self-accountability, anxiety involves uncertain emotion-focused coping potential, and sadness involves low future expectancy for change (Smith and Lazarus, 1993). Because the focus of this dissertation is the effects of specific emotional states beyond mere valence on mental representations of events or objects and related judgment, it is quite important to examine previous research on the cognitive appraisal dimensions associated with identifying and defining specific emotional states beyond the valence dimension.

COGNITIVE-APPRAISAL DIMENSIONS & EMOTIONS

Through empirical examination of all appraisal dimensions in the prior research, Roseman (1984) proposed that five appraisals influence the experience of emotions. These include motivational state, situational state, probability (certainty), power, and agency (Roseman, 1984). The appraisal of motivational state is defined by whether the

dominant operative motive of an individual in a given situation is represented as appetitive (a reward that he or she seeks to attain) or aversive (a punishment that he or she seeks to avoid) (Roseman, 1984). Situational state is defined as a dimension assessing whether events are inconsistent or consistent with a person's motives (Roseman, 1984). Probability is assessed on the basis of whether a given outcome is judged to be certain or uncertain (Roseman, 1984). Power (legitimacy) is defined as whether a person believes a positive outcome is deserved or a negative outcome is deserved in the situation (Roseman, 1984). Agency is an appraisal dimension related to evaluating whether an outcome is caused by impersonal circumstances and some other persons, or the self (Roseman, 1984).

According to Roseman, Spindel, and Jose (1990), the experience of weakness leads to feeling sadness, distress, or fear, rather than frustration; dislike toward someone (unfriendliness) rather than anger; and guilt rather than regret. In addition, Roseman, Spindel, and Jose (1990) suggest that sadness (sorrow) results from an absence of reward that is certain and caused by impersonal circumstances when a negative outcome is deserved. In contrast, anger is caused by the absence of a reward or presence of a punishment that is caused by other people when a positive outcome is deserved (Roseman, Spindel, and Jose, 1990). Experiencing surprise results from events appraised as so uncertain as to be unknown or unexpected (Roseman, Spindel, and Jose, 1990). Disgust, like distress, is predicted to result from events appraised as inconsistent with an aversive motive, certain, and caused by circumstances. Shame, like guilt, results from

events appraised as motive inconsistent and caused by the self (Roseman, Spindel, and Jose, 1990).

Smith and Ellsworth (1985, 1987) and Ellsworth and Smith (1988) developed an appraisal model by integrating the models of Roseman (1984) and Scherer (1982). They showed that emotions are categorized along the five cognitive appraisal dimensions. They consistently found evidence for five appraisal dimensions: (a) pleasantness: whether an experience is unpleasant or pleasant, (b) certainty: whether a situation involves uncertainty or certainty about what is happening, (c) self/other-agency: whether events are controlled by the self or another person, (d) attentional activity: whether a person is trying to devote attention to a stimulus or divert attention from it, and (e) anticipated effort: the amount of effort seen as needed to deal with a situation. Various additional appraisals—including perceived obstacle, legitimacy, and situational control (agency)—sometimes do and sometimes do not differentiate among emotions. For instance, when people feel angry or remember feeling anger, they report thinking that the situation is unpleasant and not of their own doing and that they are moderately certain about what is happening (Smith and Ellsworth, 1985, Ellsworth and Smith, 1988a).

Based on the cognitive appraisals described above, Ellsworth and Smith (1988) explored how cognitive appraisals differentiated and characterized specific emotions beyond mere valence. According to Ellsworth and Smith (1988), shame and guilt are distinguished by appraisals of self-agency while anger, contempt, and disgust by

appraisals of other-agency. The central dimensions that differentiate fear from other negative emotions are uncertainty and anticipated effort. Sadness arises from appraisals of other-responsibility for negative events and individual control (Ellsworth and Smith, 1988). On the other hand, certainty and effort are the central dimensions which distinguish happiness from other positive emotions while hope arises from appraisals of a sense of low uncertainty and individual control (Ellsworth and Smith, 1988)

Frijda and colleagues (Frijda, 1987; Frijda, Kuipers, and ter Schure, 1989) conducted two empirical research studies to investigate cognitive appraisals proposed by a number of theorists. Through these two investigations, they found relatively strong support for appraisals of (a) valence: whether an event is unpleasant or pleasant, (b) certainty: whether the outcome of an event is uncertain or certain, (c) agency: whether the self or someone else is responsible for the occurrence of an event, (d) interestingness: whether an event is neutral or interesting, and (e) globality: whether an event can be localized in space. An additional appraisal of impact or importance distinguishes emotions (higher impact) from moods.

More important, it is worth noting that recent research efforts have found that different emotional states in the same affective valence exert different influences on cognitive processing, judgment, and behavior (Lerner and Keltner, 2000, 2001; Lerner, Small, and Loewenstein, 2004; Raghunathan and Pham, 1999; Raghunathan, Pham, and Corfman, 2006; Tiedens and Linton, 2001). In the following, some of these research

findings are reviewed and discussed.

DIFFERENT EMOTIONS AND DIFFERENT EFFECTS

With a focus on the relationship between perceived risk and reward, Raghunathan and Pham (1999) found that, in choices between high-risk/high-reward and low-risk/low-reward options, sad individuals consistently favor the former, whereas anxious individuals consistently favor the latter. This is presumably because, even though their states are temporarily dominant, sad individuals tend to infer that they have lost something of value, which activates a goal of reward acquisition that shifts preferences toward high-reward options. In contrast, anxious individuals tend to infer that the situation is uncertain and beyond control (typical causes of anxiety), which activates a goal of risk avoidance that shifts preferences toward low-risk options.

Lerner, Small, and Loewenstein (2004) found that sadness reverses the classic endowment effect, that is, the tendency to place a higher value on objects that are already in individuals' possession compared to identical objects that not in their possession. In contrast, disgust eliminates the endowment effect. According to Lerner, Small, and Loewenstein (2004), this is because sadness creates an individual's motivation to change the current situation, which increases the willingness to pay for objects that are not in his possession (higher purchase prices) and also increases the willingness to sell objects that currently are (lower selling prices). In contrast, disgust triggers an impulse to get rid of objects that are currently in his possession (lower selling prices) without necessarily

distorting the value of objects that are not in his possession (unchanged purchase prices).

More importantly, existing evidences suggest that emotional states categorized by cognitive appraisal dimensions produce judgments that are congruent with their constituent appraisals. For instance, Keltner, Ellsworth, and Edwards (1993) found that participants in an angry state tended to blame someone one else for a subsequent negative event, whereas participants in a sad state were more likely to blame the situation, the agency associated with sadness. Lerner and Keltner (2000, 2001) also found that feeling of fear associated with appraisal that situation is risky enhanced perceptions of risk in a subsequent situation.

DeSteno et al. (2000) found that congruency along appraisal dimensions existed between emotional states and subsequent judgments in an emotion-specific manner. For instance, participants in a sad state believed sad events to be more likely to occur than angering ones. In contrast, angry participants estimated that angering events were more likely to occur than sad ones. DeSteno et al. (2000) suggest that the congruency between emotional states and their effects on cognition results from the informational value of specific emotions rather than their valence.

These research results explicitly indicate that appraisal-congruent cognition and judgment exist along any appraisal dimension. Further, some research focused on the certainty appraisal of emotional states and found the congruency between emotional states associated with feeling certain (vs. uncertain) and subsequent cognitive processing

as well as judgment (Tiedens and Linton 2001). The research findings about certainty appraisal and its effect on information processing are discussed in the following section.

CERTAINTY & CONGRUENT EFFECTS

As explained, an increasing number of research findings indicate that specific central appraisal dimensions differentiate some emotions from other emotions. Among other dimensions, certainty has been deemed quite important in differentiating specific emotions. In particular, a sense of uncertainty differentiates fear from other negative emotions while feeling of happiness is more strongly associated with the sense of certainty compared to other positive emotions (Frijda, Kuipers, and ter Schure, 1993).

From the affect-as-information approach, the experience of certainty-related emotions signals a higher certainty and confidence about what is occurring in the current situation and what will happen next (Smith and Ellsworth, 1985). In contrast, other emotions associated with the sense of uncertainty lead individuals to feel unsure what is happening in the current situation and to about what will happen next (Frijda 1993; Roseman, 1984; Scherer, 1984; Smith and Ellsworth, 1985). Therefore, certainty appraisal is the degree to which future events seem predictable and comprehensible versus unpredictable and incomprehensible to the individual. Previous research suggests that the experience of certainty resulting from emotions can give rise to appraisal-congruent judgments in a subsequent situations and that the resulting experience of feeling certain or uncertain ultimately influence cognitive processing (Tiedens and Linton

2001).

Weary and Jacobson (1997) found that individuals who chronically feel uncertainty are more likely to process information more systematically than do those who chronically feel certain. Relatedly, depressed individuals tend to process information in a more systematic way because they lack confidence in their own judgments (Edwards and Weary, 1993). Tiedens and Linton (2001) also found that respondents made predictions with greater confidence when under states of disgust or happiness than when under states of fear or hopefulness. They suggest that this is presumably because both disgust and happiness typically arise in situations appraised as certain (e.g., witnessing something repulsive or receiving very good news), whereas fear and hope typically arise in situations appraised as uncertain (e.g., going up for tenure). Further, Tiedens and Linton (2001) showed that individuals in emotional states associated with feeling certain used heuristic processing strategies, whereas those in emotional states related to feeling uncertain employed systematic processing strategies.

Taken together, the appraisal dimension of certainty has been recognized as an important one influencing people's cognitive processing and judgment in a congruent manner. Nevertheless, our knowledge about the relationship between the certainty dimension and levels of mental representations is limited. In the next section, construal level theory and certainty (probability) as a determinant of psychological distance are discussed.

CONSTRUAL LEVEL THEORY

Construal level theory is an explanation of how psychological distance influences individuals' thoughts and behavior. On the basis of theories of categorization (Rosch 1975), concept formation (Medin and Smith 1984), and action identification (Vallacher and Wegner 1987), construal level theory basically proposes that individuals use low-level construals to represent psychologically near events or objects, whereas they use high-level construals to represent psychologically distant events or actions (Trope and Liberman 2010). Construal level theory defines high-level construals (e.g., a “communication device”) as abstract, coherent, superordinate, and decontextualized mental representations that extract the gist from the available information about events or actions (Trope and Liberman 2010). Low-level construals (e.g., a “cell phone”) are, in contrast, defined as concrete, specific, subordinate, and contextualized representations of information about events or actions (Trope and Liberman 2010). Construal of psychologically remote events or objects emphasizes their superordinate or central features, whereas construal of psychologically proximate events emphasizes their subordinate or secondary features.

According to construal level theory, how people construe events or objects depends on their psychological distance from the events or objects. For example, a high-level construal may represent “painting a room” as “making the room look fresh,” whereas a low level construal may represent the same event as “applying brush strokes.”

Similarly, a high-level construal may represent “moving into a new apartment” as “starting a new life,” while a low-level construal may represent the same event as “packing and carrying boxes.” Thus, construal level theory suggests that the same information about an event or action is more likely to be construed in terms of superordinate features rather than subordinate features when the event or object is psychologically distant than near (Trope and Liberman 2010). To use a visual analogy, at a greater distance from an event or action, the main features of the event or action are more prominent, whereas the details are less prominent. From a distant perspective, individuals using high-level construals tend to see the forest, but from a proximal perspective, they are more likely to see the trees, using low-level construals (Fiedler 2007).

At the core of differentiating construal levels lie psychological distances. A research stream within the framework of construal level theory has shown that different dimensions of psychological distance affect mental representations and that these mental representations, in turn, guide prediction, evaluation, and behavior. The dimensions of psychological distances influencing people’s construal levels include a temporal, spatial, social, and certainty-related (probability) distance (Fiedler, 2007; Trope and Liberman 2010; Trope, Liberman, and Wakslak 2007). Representations of psychologically distant events or actions achieve abstraction by omitting secondary and incidental features about them, whereas representations of psychological near events or actions are rich in details

(Trope, Liberman, and Wakslak, 2007). That is, moving from a concrete representation of events or objects to a more abstract representation involves retaining central features and omitting features that by the very act of abstraction are deemed incidental (Trope and Liberman, 2010).

Desirability vs. Feasibility

Another significant difference between high-level and low-level mental construals of events or actions is their emphasis on desirability versus feasibility considerations (Liberman and Trope, 1998). Desirability refers to the value of an end-state of the events or actions, whereas feasibility refers to the ease or difficulty of reaching the end-state (Sagristano, Trope, and Liberman, 2002). That is, desirability focuses on the superordinate “why” aspects of events or actions, whereas feasibility refers to subordinate “how” aspects of them (Trope, Liberman, and Wakslak, 2007). For example, students using a high-level construal are more likely to represent an academic course with a focus on the interest level of the course, whereas students using a low-level construal of the course will represent information about the difficulty of the course (Sagristano, Trope, Liberman, 2002). Accordingly, desirability is associated with a high-level feature of an event or action and is likely to be more influential in decisions about the more psychologically distant event or action. Feasibility, in contrast, is a low-level feature of an event or action and therefore is expected to be more influential in making decisions about the more psychologically near event or object. Based on the psychological distance

of events or objects, people tend to focus on either goals associated with desirability or goals related to feasibility. That is, when they experience more psychological distance from an event or objects, they prefer desirability to feasibility (Trope and Liberman, 2010).

Alignable vs. Nonalignable Differences

In addition to representing consumption goals in different ways, mental construal levels play a pivotal role in evaluating product alternatives based on their attributes and choosing one of them in preference formation (Malkoc, Zauberan, and Ulu, 2005). From a structural alignment approach (Gentner and Markman, 1994; Markman and Medin, 1995, Medin, Goldstone, and Markman, 1995), individuals evaluate product alternatives based on three attribute types. These types are commonalities, alignable differences, and nonalignable differences (Gentner and Markman, 1994). Commonalities are defined as identical attribute levels across alternatives (Gentner and Markman, 1994). Alignable differences are "features that are comparable along the same dimension" (Zhang and Markman 1998, p. 413), whereas nonalignable differences refer to attributes that are uniquely associated with one brand but not the other (Zhang and Markman, 2001).

For instance, when comparing two laptop computers, the argument that one has 2 GB RAM, the other has only 1 GB RAM emphasizes an alignable difference. On the other hand, the claim that one laptop computer has a DVD-ROM player while the other computer has a pre-installed antivirus program points to a nonalignable difference. When

choosing among alternatives in the product evaluation context, individuals primarily rely more on alignable differences than nonalignable differences because nonalignable differences are more difficult to process (Gentner and Markman, 1994). However, according to recent research, this pattern of relying more on alignable differences sometimes might not occur.

Based on temporal distance, Malkoc, Zauberan, and Ulu (2005) manipulated participants to have a high-level or low-level construal mindset. They then asked participants to evaluate two brands of potato chips. The two brands were designed to be equally attractive overall; one of the options, however, was designed to be better on its alignable attributes, whereas the other brand was better on its nonalignable attributes. The results showed that when participants with a high-level construal mindset, they increased their reliance more on nonalignable attributes in spite of the difficulty of comparing nonalignable products attributes. Participants primed to have a high-level construal mindset chose the nonalignable better option over the alignable better option (Malkoc, Zauberan, and Ulu, 2005). This result clearly indicates that comparing nonalignable attributes requires higher-level construal than comparing alignable attributes because making nonalignable attributes comparable requires representing them at a higher construal level.

Certainty and Construal Levels

How does an individual's perception of certainty relate to the types of construal

levels discussed earlier? As discussed, one of the four dimensions of psychological distance is certainty (probability) (Bar-Anan, Liberman, and Trope, 2006; Todorov, Goren, and Trope, 2007; Trope and Liberman, 2010). Wakslak, et al. (2006) conducted a series of experimental studies to explore the relationship between certainty-related distances and construal levels. In one of the studies, participants were asked to imagine that they were either highly likely or highly unlikely to engage in the scenario and to group objects related to each of four scenarios into as many groups as they deemed appropriate. Participants in the improbable condition created fewer, broader groups out of the objects than participants in the low-likelihood condition (Wakslak et al., 2006).

In another study, Wakslak, et al. (2006) asked participants to read a flyer advertising a paid research assistant position described in broad, general terms (e.g., helping behavior research) as well as in specific, low-level terms (e.g., dropping a book in front of participants). Participants in the high-probability condition were told that they would be almost certain to get the position if they signed up for the post, while participants in the low-probability condition were told that they would be unlikely to get the position if they signed up for the post. At that study's end, participants were asked to indicate the nature of the research assistantship that had been advertised earlier. Participants in the high-probability condition were more likely to provide specific than general descriptions of the assistantship; this tendency was significantly lower for participants in the low-probability condition. In addition to these open-ended responses,

participants were asked to identify the assistantship in specific or general terms on a forced-choice item. While participants in the high-probability condition preferred the specific to the general identification, those in the low-probability condition preferred the general identification to the specific one.

Accordingly, Wakslak et al. (2006) suggest that decreasing the probability of a given event enhances the tendency to activate high-level construals of that event. That is, certainty (probability) influences a set of distinct but related variables (e.g., identification of ends vs. means, broad vs. specific categorization, global vs. local processing) that are implicated in a general shift between high-level construals and low-level construals (Wakslak et al., 2006). These results provide invaluable insights into how an individual's perception of certainty has an influential impact on his or her subsequent representations of events or actions.

Following this logic, it is possible that people in an emotional state associated with feeling certain are more likely to represent events or actions in a more low-level, concrete manner in terms of their concrete and detailed features, where those in an emotional state related to feeling uncertain tend to represent the events or actions in a more high-level, abstract fashion.

Chapter 3: Research Question and Hypotheses

A considerable amount of research studies have investigated the effects of emotional states on cognitive processing, judgment, and behavior from different perspectives and contributed to enhancing our knowledge about the persuasive effects of emotions. Nonetheless, existing research findings have barely identified the link between emotional states and advertising messages framed at different construal levels. In other words, few empirical studies have investigated the persuasive impacts of emotions on advertising messages describing product benefits or attributes either in a more high-level or in a more low-level manner. One exception is Labroo and Patrick (2009), who explored the effects of affective states on levels of mental construal and persuasion within the valence-based framework. Even though Labroo and Patrick's (2009) effort is meaningful in terms of linking emotions to construal levels, their research findings appear to be limited because of their valence-based approach.

Based on the information explanations, Labroo and Patrick (2009) suggest that by signaling that a situation is benign, happiness allows individuals to broaden their attention and to focus on future opportunities, whereas by signaling that the situation is problematic and imminent, unhappiness leads them to take a more proximal perspective. As a result, Labroo and Patrick (2009) argue that individuals in a happy state tend to use higher levels of presentations of events and actions more than those in an unhappy state. Even though this research finding indicates that emotions can exert a direct influence on

individuals' mental representations of events and their evaluation of persuasive messages construed at different levels (Labroo and Patrick, 2009), this research effort within the valence-based approach appears to underestimate the qualitative differences in emotional states and overlooks the different relationships between psychological distances and states. Further, other research has oppositely argued that positive emotions signal that all is currently well and lead people to focus on proximal rather than distant opportunities and goals (Andrade, 2005; Pham, 1998). Further, Labroo and Patrick (2009) appear to undervalue the appraisal content of emotions and its different effects on subsequent information processing and judgment.

As appraisal theorists suggested, individuals experience specific emotions on the basis of evaluating which appraisal components are involved and how they are involved (Arnold, 1960; Frijda, 1986; Roseman, 1984; Smith and Ellsworth, 1985; Smith and Lazarus, 1993). Appraisal components ensue from interpreting events or situations (Frijda, 1986; Roseman, 1984; Smith and Ellsworth, 1985; Smith and Lazarus, 1993). Therefore, specific emotions the individual experiences vary in terms of cognitive appraisals, such as certainty, pleasantness, agency, anticipated effort, and control (Ellsworth and Smith, 1988; Roseman, Spindel, and Jose, 1990). More importantly, many appraisal components produced by emotion induction influence subsequent information processing and judgment in a congruent manner (Clore and Parrott, 1994; Lerner and Keltner, 2000, 2001; Raghunathan and Pham, 1999; Tiedens and Linton, 2001).

Among the different cognitive-appraisal dimensions, certainty is a particularly interesting dimension of emotions. Influencing individuals' perception of events or situations, emotions characterized by certainty have a direct impact on subsequent cognitive processing and judgment in a congruent manner (Tiedens and Linton, 2001). Emotions associated with certainty appraisal lead individuals to make predictions about future events with greater certainty, whereas other emotions low on certainty appraisal allow them to judge future events with less confidence (Tiedens and Linton, 2001).

In a similar vein, prior research on construal level has suggested that people experience certainty (probability) as one dimension of psychological distance and it plays an important role in determining an individual's level of mental construal (Bar-Anan, Liberman, and Trope, 2006). Certainty (probability) influences a set of distinct but related variables (e.g., identification of ends vs. means, broad vs. specific categorization, global vs. local processing) that are implicated in a general shift between high-level construals and low-level construals (Wakslak and Trope, 2009). There is a significant association between the experience of certainty and level of mental construal (Trope and Liberman, 2010). That is, the experience of certainty leads individuals to have a low-level construal mindset while the experience of uncertainty results in having individuals use a high-level construal mindset.

The basic premise of this dissertation is that the induction of emotions associated with certainty (vs. uncertainty) leads individuals to have a low-level (vs. high-level)

construal mindset. From an appraisal approach, different emotions result in varying degrees of certainty in subsequent tasks and play an influencing role as a factor informing the individual about the nature of the current situation (Frijda, 1988; Schwarz and Clore, 1983). Specifically, this dissertation proposes that individuals use their emotional state as a psychological distance factor to have either a high-level or low-level construal mindset.

Signaling that individuals understand well what is and will be happening, emotions characterized by greater certainty might lead individuals to have a low-level construal mindset and to represent events or actions in a more low-level and concrete manner based on their concrete and contextualized knowledge constructs. In contrast, individuals in emotions characterized by feeling uncertain might have a high-level construal mindset and represent objects and events based on their abstract and decontextualized knowledge constructs because the emotions are signaling that they are uncertain what is and what will be happening around them. Therefore, the following research question and hypotheses are put forth:

RQ 1: Do different emotions within the same valence differ in the mental representation of events or actions?

Hypothesis 1: Individuals induced with uncertainty-related emotions construe actions at a higher level compared to those induced with certainty-related emotions.

In addition to the hypothesized relationship between the certainty appraisal content of emotions and construal level, this dissertation study predicts that the certainty

appraisal content of emotion influences likelihood estimates for negative, uncertain events. The effects of certainty-related psychological distance can be captured with one's estimate of the certainty of an event. Previous research on the effect of emotion and construal level supports implicitly or explicitly support this prediction.

For instance, Lerner and Keltner (2001) found anger and fear, which are significantly different in terms of certainty appraisals, gave rise to different likelihood estimates for uncertain and negative events. Participants primed to feel angry responded that uncertain and negative events were less likely to occur than did those who were primed to feel fearful. Even though Lerner and Keltner (2001) paid attention to the different certainty appraisal content between anger and fear, they did not provide a direct mechanism to link emotions and likelihood estimates. It is likely that construal levels primed by emotion induction affect the perceived psychological distances with and the representation of negative uncertain events.

From the perspective of construal level theory, uncertain events, which are psychologically distant, are mentally represented in a more high-level and abstract manner than certain events that are psychologically proximal (Wakslak et al., 2006). Individuals do not frequently encounter unlikely events, and they therefore usually have limited information about specific aspects of such occurrences. Individuals with a high-level mindset interpret uncertain events with abstract and decontextualized knowledge constructs (Trope and Liberman, 2010; Wakslak et al., 2006). In contrast, those with a

low-level mindset construe the uncertain events based on concrete and contextualized knowledge constructs (Trope and Liberman, 2010; Wakslak et al., 2006). Therefore, the primed construal level of participants influences their likelihood estimates for events.

Drawing on this account, it is possible that certainty-related emotions (e.g., happiness, anger) lead to decrease one's likelihood estimate for uncertain events because one's low-level mindset primed by certainty-related emotions imparts a sense of proximity. However, uncertainty-related emotions (e.g., hope, fear) might result in increasing one's likelihood estimate for uncertain events because one's high-level mindset produced by uncertainty-related emotion imparts a sense of distance. Therefore, the following hypothesis is put forth:

Hypothesis 2: Uncertainty-related emotions lead individuals to increase their likelihood estimates for uncertain events compared to certainty-related emotions.

A growing body of research on consumer behavior and advertising has investigated the effect of emotions on a consumer's response to an advertising message from diverse perspectives. The majority of research on the persuasive effects of emotions on advertising evaluations has been developed on the basis of the dual-processing framework (Cohen, Pham, and Andrade, 2008). The research findings with the framework commonly suggest that negative emotions promote more systematic and elaborative processing in evaluating advertising messages, whereas positive emotions result in heuristic and peripheral processing by signaling that individuals have enough

knowledge constructs for interpreting the messages (Bohner et al., 1992; Mackie and Worth, 1989).

Adopting the certainty appraisal component of emotions, Tiedens and Linton (2001) found that uncertainty-related emotions lead individuals to engage in evaluating advertising messages in a systematic way, whereas certainty-related emotions result in the processing the advertising messages in a heuristic way. However, little research attention has been paid to the fit between certainty-related emotions and ad messages framed at different construal levels. From the perspective of construal level theory, product benefits related to consumption goals can be framed differently in distinct advertising messages with an emphasis on desirability or feasibility (Lee, Keller, and Sternthal, 2010; Trope and Liberman, 2010). In particular, desirability is manipulated within an ad message by describing a product in terms of expected benefits that highlight why one should use the product, while feasibility is expressed within an ad message by illustrating the product in terms of its features that stress how one can use them ((Lee, Keller, and Sternthal, 2010).

As described, emotions associated with certainty (vs. uncertainty) might trigger an individual's low-level (vs. high-level) construal mindset. Extending this prediction, it can be suggested that individuals induced to feel certainty-related emotions would be more favorable toward ad messages and advertised products when products are described in terms of feasibility rather than desirability and that the opposite would be found for those

induced to feel uncertainty-related emotions. Thus, the following hypothesis is put forth:

Hypothesis 3: Individuals induced with certainty-related emotions will view an ad message focused on feasibility more favorably than an ad message focused on desirability; individuals induced with uncertainty-related emotions will view an ad messages focused on desirability more favorably than an ad message focused on feasibility.

In addition, different product attribute types in ad messages (e.g., alignable vs. nonalignable) could be construed either at a high or low level (Malkoc, Zauberaman, and Ulu, 2005). According to the theory of structural alignment (Gentner and Markman, 1994, 1997; Markman and Medin, 1995, Medin, Goldstone, and Markman, 1995), product attributes can be classified into three groups: commonalities (identical attribute levels across alternatives), alignable differences (common attributes that have different levels across alternatives), and nonalignable differences (aspects that do not have a corresponding attribute in other alternatives).

For example, when comparing when comparing Naproxen and Aleve, the argument that Naproxen relieves inflammation-based pain for 12 hours, and Aleve does so for only 8 hours, emphasizes an alignable difference. In contrast, the claim that PopTarts have double icing, while Toaster Strudel is made with real fruit points to a nonalignable difference. According to the literature on structural alignment, individuals usually rely on alignable differences more than nonalignable differences in making decisions because it is more difficult to process nonalignable differences (Zhang and

Markman, 2001). However, according to Malkoc, Zauberman, and Ulu (2005), when individuals have a high-level construal mindset, they rely more on nonalignable differences than alignable differences in decision processes and show a greater preference for nonalignable-better products. This finding indicates that comparing nonalignable attributes between products demands higher-level construal than comparing alignable attributes (Trope and Liberman, 2010). This result posits the positive association between nonalignable (vs. alignable) attribute differences and abstract (vs. concrete) mental representation. Consumers' responses to alignable differences versus nonalignable differences in a comparative advertising context may vary according to the certainty appraisal content of emotions. This study predicts that individuals feeling uncertainty-related emotions eliciting a higher-level construal mindset would favor the nonalignable-better brand and its ad message over the alignable-better brand and its ad message in a comparative advertising context. The additional two hypotheses are put forth:

Hypothesis 4: Individuals induced with uncertainty related emotions will prefer the nonalignable-better brand to the alignable-better brand.

Hypothesis 5: Individuals primed to feel uncertainty-related emotions will evaluate an advertising message illustrating the nonalignable-better brand more favorably than an ad message describing the alignable-better brand.

Chapter 4: Experiments

OVERVIEW OF THE EXPERIMENTS

Four online experimental studies were conducted to test the proposed hypotheses and the research question six pretests were carried out for developing stimuli. In these studies, participants' four emotional states (i.e., happy, hopeful, angry, fearful) were manipulated by means of asking them to recollect emotion-related personal experiences (Study 1) or combining emotion-inducing news stories with the recollection of emotion-related experiences (Study 2-4).

To recruit participants for this dissertation research, I used Amazon's Mechanical Turk (AMT). It is an online labor market where employees (called workers) are recruited by employers (called requesters) for the execution of tasks (called HITs, acronym for Human Intelligence Tasks) in exchange for a wage (called a reward). Recent research has documented that data obtained through AMT are at least as reliable as those obtained via traditional methods (Buhrmester, Kwang, and Gosling, 2011; Paolacci, Chandler, and Ipeirotis, 2010). Participants were paid \$1.38-\$2.00 for completing an experimental study.

Study 1 explored the positive relationship between emotions characterized by certainty appraisals (vs. by uncertainty appraisals) and mental representations of events at a lower-construal (vs. higher-construal) level. The effects of emotions on likelihood estimates for uncertain events were also investigated. The predicted effects of emotions

on construal level and uncertainty judgment were retested in Study 2. Further, Study 3 tested the third hypothesis that the certainty appraisal content of emotions has a different impact on the evaluation of advertising messages focusing on feasible attributes versus desirable end states. To develop ad stimuli, two pretests were conducted. Study 4 investigated how uncertainty-related emotions (vs. certainty-related emotions) would respond to two different ad messages featuring products better on alignable attributes or better on nonalignable attributes in the context of comparative advertising.

STUDY 1

Overview

The objective of Study 1 was to empirically investigate whether the certainty appraisal component of emotions has a direct influence on mental construal levels and likelihood judgments about uncertain events. Specifically, in Study 1, it was expected that uncertainty related emotions (i.e., hope, fear) would lead participants to have a higher-level construal mindset and rate uncertain events as more likely to happen, while certainty related emotions (i.e., happiness, anger) would cause participants to have a lower-level construal mindset and evaluate uncertain events as less likely to occur. Four emotional states were induced by an imagery technique. Their different effects on mental construal levels and likelihood judgments about uncertain events were evaluated.

Experiment Design

A single-factor, between-subjects experimental design with four participant groups was employed to examine the effects of the certainty appraisal content of emotions on individuals' construal levels and likelihood judgments about uncertain events beyond mere valence. To test the first and second hypothesis, happiness (positive, certain), hope (positive, uncertain), anger (negative, certain), and fear (negative, uncertain) were selected because they were found to be significantly different in terms of certainty appraisals (Frijda, 1993; Smith and Ellsworth, 1985) and to exert certainty-congruent effects on subsequent judgment and information processing in the previous research (Tiedens and Linton, 2001). These emotional states were manipulated, using an imagery technique (see Appendix A).

Subjects

A total of 163 participants were recruited through AMT. Among the participants, 39.9% (n=65) were male and 60.1% (n=98) were female. The subjects came from the general population, which contributed to the external validity of the study results. The participants' ages ranged from 18 to 72 ($M = 39.42$). More than 80% of the participants had at least some post-secondary education (See Table 4.1).

Demographic Characteristics	Frequency	Percentage
Gender		
Male	65	39.9
Female	98	60.1
Age		
19-29	51	31.3
30-39	43	26.4
40-49	23	14.1
50-59	26	16.0
60+	20	12.3
Education		
High School /GED	22	13.5
Vocational/Technical School (2-year)	7	4.3
Some College	59	36.2
College Graduate (4-year)	51	31.3
Master's Degree	17	10.4
Doctoral Degree	0	0.0
Professional Degree (JD, MD)	6	3.7
Other	1	0.6

Table 4.1: Sample Demographics from Study 1

Procedure

This experimental study was carried out online. Before the participants had access to the study site, they were instructed that this online task consisted of three unrelated studies. The instruction also indicated that they were likely to complete the task within 30 minutes because the three unrelated studies were short. They were also informed that the purpose of the study was to understand emotion-related issues and judgments. Since the experiment was conducted online, signed informed consent was not obtained. Instead,

participants' voluntary act of clicking on the "Accept HIT" button and filling out the questionnaire was considered to constitute informed consent.

After clicking the "Accept HIT" button, participants were randomly assigned to one of the following four experimental conditions: 1) the happy emotional condition, 2) the hopeful emotional condition, 3) the angry emotional condition, and 4) the fearful emotional condition.

The "first" study on emotional memories, which served as an emotion induction, was introduced. The participants, in an open-ended questionnaire, were instructed to remember, relive, and recall events that had made them feel a specific emotion (i.e. happy, hopeful, angry, or fearful) and to write a personal story related to the feeling state (Smith and Ellsworth, 1985). This manipulation is explained in more detail below. In brief, the participants were first asked to recall a past emotional experience and, when they were ready, they were asked to answer a series of six questions about the emotional experience by describing their personal experience in more detail (Smith and Ellsworth, 1985) (See also Appendix A).

After answering the six questions, participants also responded to a shortened version of Smith and Ellsworth's (1985) appraisal questionnaire with regard to the certainty and valence appraisal dimensions. This shortened appraisal questionnaire served as a manipulation check. All five items were rated on 11-point scales ranging from 1 (not at all) to 11 (extremely).

In the “second” study, participants were informed that the requester was seeking their help in understanding what certain behaviors mean to people. They were instructed to select which of two ways best describe how they thought about certain actions based on their first impression. After this instruction, participants were presented with two alternative descriptions for 19 different target behaviors and were asked to choose the description that they personally believed to be more appropriate for each pair. In particular, each activity was followed by two descriptions. One description was associated with abstract construal and addresses the “why” aspect of the activity (Vallacher and Wegner, 1989). The other was associated with concrete construal and addresses the “how” aspect of the activity (Vallacher and Wegner, 1989). An overall score was obtained by adding the number of abstract descriptions selected by a participant across 19 behaviors (see Appendix B).

Next, the participants were asked to read another instruction for the “third” study. The instruction began with explaining that there were some life events that were either certain or uncertain. Participants were instructed to indicate the extent to which four events would happen to them compared to other individuals of the same sex and age (see Appendix B). Lastly, participants answered basic demographic questions and completed this task by obtaining their confirmation code that was randomly generated and was needed to receive their wage for this task.

Manipulation

Prior research has showed that emotions are easily manipulated through exposure to affectively charged stimuli such as music, videos, and pictures, or through the recall of emotionally involving experiences (Baas, De Drew, and Nijstad, 2008; Brenner, 2000; Gerrards-Hesse and Spies, 1994). Among these induction techniques, Study 1 employed the imagery technique because it has been deemed to be quite efficient and effective in terms of inducing distinctive and subtle emotional states (Cohen, Pham, and Andrade, 2008). Given that the objective of Study 1 was to investigate whether and how the certainty appraisal content of emotions influences individuals' construal levels and related judgments, it was important to manipulate the four emotions independently. Thus, subjects' four different emotions (happiness, hope, anger, and fear) were induced by the imagery technique.

The emotion induction imagery procedure was adapted from Smith and Ellsworth (1985) and Tiedens and Linton (2001). To induce the four emotional states, the subjects in each condition were required to recall a past emotional experience that made them the target of each feeling (i.e. happy, hopeful, angry, or fearful). They wrote about their own autobiographical emotional event by answering a series of six open-ended questions in more detail.

Measures

Construal Level. The hypothesized certainty-congruent effects of emotions on mental construal levels were explored using the 19-item version of Behavior

Identification Form (BIF, Vallacher and Wegner, 1989), as adapted by Liberman and Trope (1998). In the BIF, midlevel neutral actions are listed along with two alternative descriptions for each action at a lower or higher construal level (see Appendix B).

Specifically, participants were presented with two alternative descriptions for 19 different target behaviors. Each item presented a target behavior (e.g., “locking a door”) and asked participants to choose the description that they personally believed to be more appropriate for each pair: one describing it in terms of its means (how an action is performed; e.g., “turning a key”) and one describing it in terms of its ends (why an action is performed; e.g., “securing a house”). Preference for the low-level identification for an item was coded as a 0, whereas preference for the high-level identification was coded as a 1. These values were then summed to create an index of level of action identification ranging from 0 to 19, with higher scores indicating stronger preferences for high-level construal.

Likelihood Judgment. To explore the certainty-congruent effects of specific emotions on subsequent judgments, the four items employed by Lerner and Keltner (2001) were adopted and slightly modified. Because Lerner and Keltner (2001) pretested and developed these items for their student subjects, some items were slightly revised in accordance with the demographic characteristic of AMT workers (i.e., age, education level). The four items were describing ambiguous events with respect to certainty (Lerner and Keltner, 2001): 1. Having gum problems, 2. Having a heart attack, 3. Being on an

airplane that encounters severe turbulence, 4. Lost at night for more than 15 minutes. These items were rated on 11-point scales ranging from 1 (very unlikely) to 11 (very likely). Participants' responses for the four ambiguous events were averaged to form a composite unlikelihood judgment measure (Cronbach's $\alpha = .73$).

Results

Manipulation Check.

To check the efficacy of emotion manipulation, a shortened version of Smith and Ellsworth's (1985) appraisal questionnaire with regard to the certainty and valence appraisal dimension was used. Participants were presented with: (1) "How well did you understand what was happening around you in this situation?" (2) "How well could you predict what was going to happen in this situation?" (3) "How uncertain were you about what was happening in this situation?" (reverse-coded item) (4) "How unpleasant was it to be in the situation you wrote about?" (reverse-coded item) (5) "How enjoyable was it to be in the situation you wrote about?" Responses ranged from 1 = not at all to 11 = extremely. The first three items were averaged to form a Certainty Index (Cronbach's $\alpha = .72$), and the last two items were averaged to form a Valence Index (Cronbach's $\alpha = .95$). To assess the effectiveness of the recollection of a past personal experience as an emotion-induction technique, a series of one-way ANOVAs on the two indexes were conducted.

Valence. A one-way ANOVA on the Valence Index showed the significant difference between positive and negative emotions $F(3, 159) = 253.60, p < .001$). Participants who had undergone the happy ($M_{\text{happy}} = 10.41$) and hopeful ($M_{\text{hopeful}} = 8.01$) inductions rated their experience as more pleasant than did those who had undergone the angry ($M_{\text{angry}} = 1.48$) and fearful ($M_{\text{fearful}} = 1.50$) inductions.

Certainty. Another one-way ANOVA result revealed the predicted differences between certainty related emotions and uncertainty related emotions ($F(3, 159) = 30.06, p < .01$). Subsequent contrast analyses indicated that participants who were induced to feel happy provided significantly higher Certainty Index scores ($M_{\text{happy}} = 9.03$) than did those who were induced to feel hopeful ($M_{\text{hopeful}} = 6.93, p < .01$), angry ($M_{\text{angry}} = 7.87, p < .05$), and fearful ($M_{\text{fearful}} = 5.16, p < .01$). In contrast, the participants who were induced to feel fearful ($M_{\text{fearful}} = 5.16$) rated their experience as more uncertain than did those who were induced to feel happy ($M_{\text{happy}} = 9.03$), hopeful ($M_{\text{hopeful}} = 6.93$), and angry ($M_{\text{angry}} = 7.87$) ($p < .01$). Further, the certainty ratings of participants who were induced to feel fearful were in the lower portion of the Certainty Index. Anger led to significantly lower Certainty Index scores than happy, and hope resulted in significantly higher Certainty Index scores than fear. Further, the difference in Certainty Index scores between the participants in the angry and hope condition were not significant ($M_{\text{hopeful}} = 6.93$, vs. $M_{\text{angry}} = 7.87, p > .10$).

Hypothesis Testing

The first hypothesis was tested via a single-factor ANOVA for BIF scores. This

analysis demonstrated there were significant differences in the BIF scores between four emotional conditions ($F(3, 159) = 9.73, p < .01, \eta^2 = .16$). A post hoc analysis using Tukey's procedure revealed that participants in the fear ($M_{\text{fearful}} = 14.49$) condition had the highest BIF scores compared to those who were induced to feel happy ($M_{\text{happy}} = 8.89$), angry ($M_{\text{angry}} = 11.71$), and hopeful ($M_{\text{hopeful}} = 11.82$) at a significant level of .05. In contrast, participants in the happiness condition provided significantly lower BIF scores than did those in the other three conditions ($M_{\text{happy}} = 8.89$ vs. $M_{\text{hopeful}} = 11.82, M_{\text{angry}} = 11.71, M_{\text{fearful}} = 14.49, p < .05$). The BIF scores between participants in the anger and hope condition showed no significant difference ($M_{\text{angry}} = 11.71$ vs. $M_{\text{hopeful}} = 11.82, p > .99$). The mean plots of the BIF scores are displayed in Figure 4.1. These results partially supported the first hypothesis.

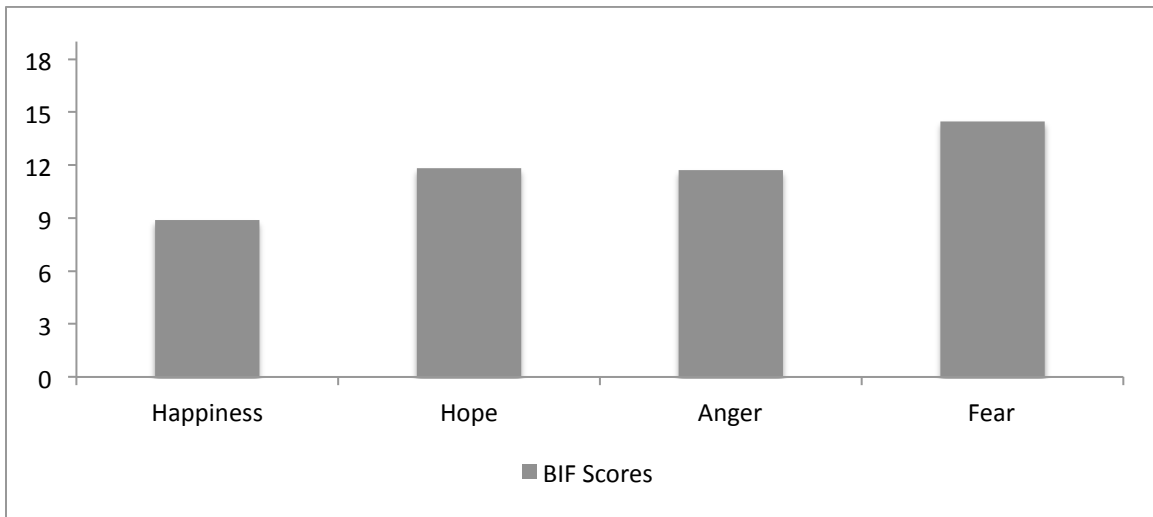


Figure 4.1: BIF Scores

A single-factor ANOVA was run on the uncertainty judgment measure. The

results showed that participants' likelihood judgment about the uncertain events significantly varied with their emotional states ($F(3, 159) = 13.27, p < .01, \eta^2 = .20$). In particular, participants in the fear condition had significantly higher ratings ($M_{\text{fear}} = 6.28$) with regards to the uncertainty judgment measure than did those in the happiness ($M_{\text{happiness}} = 4.22$), hope ($M_{\text{hope}} = 5.43$), and anger condition ($M_{\text{anger}} = 5.26$) as shown in Table 4.2 ($p < .05$). In contrast, participants in the happiness condition judged that uncertain future events would be less likely to occur than did those in the hope, anger, and fear condition. However, ratings of the uncertainty judgment measure between participants in the anger and hope condition were not significantly different.

Contrast	Mean Difference	<i>SE</i>	95% Confidence Interval
Happiness vs. Hope	1.22*	0.32	0.39, 2.05
Happiness vs. Anger	1.07*	0.32	0.22, 1.91
Happiness vs. Fear	2.06*	0.33	1.21, 2.91
Hope vs. Anger	-0.15	0.31	-0.97, 0.67
Hope vs. Fear	0.84*	0.32	0.01, 1.67
Anger vs. Fear	0.99*	0.32	0.15, 1.83

* Differences are significant at the .05 level using the Tukey HSD procedure.

Table 4.2: Differences in Means for the Likelihood Estimates

Discussion

The hypothesized effect of emotion on mental construal was partially supported in Study 1. Fear, which was lowest on the certainty measure than other feeling states, led

participants to have higher BIF scores. It was expected that participants in the hope condition had similar BIF scores compared to those in the fear condition. However, the difference in the BIF scores between the groups was significant. On the other hand, happiness and anger, which are deemed to be certainty-related emotions, resulted in significantly different BIF scores between participants in the two conditions. Further, the results indicated that the two emotions (i.e. happiness vs. hope, anger vs. fear) within the same valence led to significantly different BIF scores. This implies that when specific emotions are induced, the certainty appraisal content of them rather than their valence is able to influence an individual's mental construal level.

A similar pattern on the judgments about uncertain events was observed and partially supported the second hypothesis. When participants were induced to feel fearful, they thought that uncertain events were more likely to happen to them compared to those who were induced to feel happy, angry and hopeful. In contrast, the feeling of happiness influenced participants' lower likelihood estimates about the events than other three emotional states.

The results of Study 1 did not fully support both the first and second hypothesis. One possible explanation is that the certainty appraisal content of anger and hope is not influential enough to affect subsequent cognitive processing and judgment compared to happiness and fear. According to some appraisal theorists, hope is weakly associated with or is not strongly connected to uncertainty appraisal (Ellsworth and Smith, 1988; Frijda,

Kuipers, ter Schure, 1989; Tesser, 1990). Anger, which is mostly distinguished from other negative emotions by agency appraisal, is not strongly related to certainty appraisal (Ellsworth and Smith 1988) or is weakly associated with uncertainty appraisal (Tessor 1990). In a similar vein, the effects of anger and hope on construal levels and likelihood estimates were not significantly different in Study 1. Nonetheless, an experiment study might not be enough to confirm the results partially supported in Study 1. It appeared to be reasonable to retest the hypothesized effects of the four emotional states on construal levels and likelihood estimates.

Another possible explanation is that the imagery technique used in Study 1 led participants to have different interpretations of the type of experience they were supposed to report and resulted in extra variability in emotional states induced (Andrade, 2005; Cohen, Pham, and Andrade, 2008). Due to the possibility of this experiment error linked to the imagery technique, participants might have evaluated their emotion-related experience in many different ways. According to the meta-analysis of emotion-induction techniques by Westermann et al. (1996), combining different types of emotion-induction techniques was found to be efficient in increasing the effectiveness of the induction. Therefore, I decided to prime participants' emotional states by combining emotion-induction news stories with the recollection of emotion-related personal experiences. Study 2 commenced with a pretest to select topics and develop emotion-induction news stories, which would become part of a combined emotion-induction procedure.

STUDY 2

Overview

Two objectives guided Study 2. One was to retest the certainty-congruent effects of emotions on individuals' construal levels and likelihood estimates tested in Study 1. Specifically, it was tested that emotions with a higher (vs. lower) certainty component would result in a lower-level (vs. higher-level) construal mindset and decrease one's likelihood estimate for uncertain events. Another objective of Study 2 was to use a combined emotion-induction procedure for reducing the possible drawback of the imagery technique and increasing the effectiveness of induction. Pretest I was conducted to select news story topics and articles which served as emotion-induction materials

Pretest I: Emotion-Inducing News Stories

Prior research suggests that the combination of an imagery task and emotion-induction materials can minimize the drawbacks of the imagery technique alone. In particular, the combination technique is effective to reduce extra variability, which results from different interpretations of the type of experience subjects are supposed to recall and imagine (Andrade, 2005; Cohen and Andrade, 2004; Kavanagh, 1987). It is also efficient in decreasing the likelihood of hypothesis guessing and demand artifacts (Cohen, Pham, and Andrade, 2008).

Therefore, I decided to use the combination technique instead of the imagery

technique. Although researchers have frequently employed video clips more frequently as emotion-induction materials, these clips tend to induce more than one specific emotion at the same time and thus require the more complex inductions (Gross and Levenson, 1995). Thus, for this project, I opted for a more straightforward emotion induction approach, a story-induced task. To this end, Pretest I was designed to choose topics for the story-induced task and develop emotion-induction news stories, which could guide participants to feel one specific emotion at a time (i.e. happy, hopeful, angry, fearful) as intended.

For the pretest, 132 AMT Workers were recruited and randomly assigned to one of the nine news story conditions. Among the participants, 62.9% (n=83) were male and 37.1% (n=49) were female. The participants' ages ranged from 19 to 65 with an average of 33. Immediately after reading a news article, participants completed a commonly used emotion self-report form in which they rated the extent to which they felt for each of 14 separate emotion terms on a seven-point scale (happy, hopeful, sad, angry, fearful, scared, afraid, irritated, optimistic, nervous, excited, cheerful, inspired, nervous) (See Richins, 1997; Goldberg, Lerner, and Tetlock, 1999; Gross and Levenson, 1995; Lerner and Keltner 2001).

To obtain a composite measure of happiness, responses for the happy, excited, and cheerful items were averaged (Cronbach's $\alpha = .92$) (Richins, 1997). Participants' responses for the hopeful and optimistic items were averaged to form a composite hope measure (Cronbach's $\alpha = .95$) (Richins, 1997). I also averaged responses for the fearful,

scared, and afraid items to form a composite fear measure (Cronbach's $\alpha = .96$) (Lerner and Keltner 2001; Richins, 1997). Responses for the angry and irritated items were averaged to form a composite measure of anger (Cronbach's $\alpha = .91$). These measures showed higher levels of reliability (Lerner and Keltner 2001; Richins, 1997).

A series of single-factor ANOVAs were performed to examine the effect of the nine news stories on emotion-induction manipulations. The results supported that some news stories were able to induce specific emotions in an intended manner (see Appendix A). A one-way ANOVA on the happiness measure indicated that as shown in Table 4.3, participants reading the Batkid story felt significantly happier than did those reading other news stories ($F(8, 123) = 40.23, p < .001$). A one-way ANOVA on the hope measure provided that the hope-related materials were effective ($F(8, 123) = 41.34, p < .01$). Participants reading the news story about 9-year-old Avery Walker who had overcome lymphoblastic leukemia had the highest ratings in the hope measure as shown in Table 4.3 ($M = 6.18$), followed by those reading the news story about a Boston bombing survivor, Celeste Corcoran ($M = 5.13$).

News Story	Happy		Hopeful		Angry		Fearful	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Death of Texas Firefighter	1.26	0.64	1.57	0.94	1.71	.93	1.81	1.14
Death of Sylvia Likens	1.36	0.39	1.67	0.99	3.80	1.86	2.53	1.68
Everton Fan & Donation	3.48	1.49	4.78	1.45	1.38	1.13	1.58	1.07
Boston Bombing Survivor	4.12	1.25	5.13	0.72	2.13	0.96	2.06	1.10
Breivik & His Complaints	1.40	1.16	1.68	1.27	6.25	0.67	2.31	1.56
Batkid in San Francisco	6.30	0.61	4.80	0.40	1.00	0.00	1.11	0.26
Boston Marathon Bombings	1.63	0.88	1.84	1.32	4.90	0.82	5.75	1.10
Gas Leak & Disaster	2.20	1.18	2.57	1.36	3.63	1.45	3.18	1.73
Avery Walker over Leukemia	4.95	1.32	6.18	0.69	1.32	0.50	1.90	1.10

Table 4.3: News Stories and Emotion Index Scores

Another one-way ANOVA on the fear measure supported that the manipulation using the news story about Boston Marathon bombings was effective ($F(8, 123) = 41.34$, $p < .001$). Participants reading the news story had significantly higher ratings in the fear measure than did those reading other news stories. Last, a one-way ANOVA on the anger measure showed the manipulations were effective ($F(8, 123) = 42.03$, $p < .001$). The news story about Norwegian mass-killer Anders Behring Breivik and his jail complaints made the participants in the condition feel most angry followed by the news story about the Boston Marathon Bombings ($M = 6.25$ vs. $M = 4.90$, $F(1, 28) = 23.61$, $p < .001$).

These results indicated that news stories were able to serve as emotion-induction materials and were appropriate for being part of a combined manipulation procedure. As indicated, the imagery technique used in Study 1 required participants to maintain a higher level of motivation while responding to a series of six questions (Cohen, Pham,

and Andrade, 2008). Further, these news stories might help participants to have access to the similar types of experience they were asked to imagine and re-experience. This pretest ensured that the materials employed in Study 2 were effective.

Main Experiment Design

A single-factor, between-subjects experimental design was used to examine the effects of the certainty appraisal content of emotions on individuals' construal levels and certainty-related judgments about uncertain, negative events. Both recall and story-induced tasks were employed to manipulate participants' four different emotional states.

Subjects

A total of 141 AMT workers who did not participate in the previous studies were recruited and completed the tasks and questionnaires for Study 2. They came from the general population, which might increase the external validity of the study results. Among the participants, 51.8% (n=73) were male and 48.2% (n=68) were female. The participants' ages ranged from 19 to 73 with an average of 37. Table 4.4 presents the demographic characteristics of the sample.

Demographic Characteristics	Frequency	Percentage
Gender		
Male	73	51.8
Female	68	48.2
Age		
19-29	52	36.9
30-39	37	26.2
40-49	24	17.0
50-59	17	12.1
60+	11	7.8
Education		
Less than High School	1	0.7
High School/GED	9	6.4
Some College	48	34.0
2-year College Degree	15	10.6
4-year College Degree	54	38.3
Master's Degree	11	7.8
Doctoral Degree	1	0.7
Professional Degree (JD, MD)	2	1.4

Table 4.4: Sample Demographics from Study 2

Procedure

This experimental study was solely carried out online. Before the participants had access to the study site, they were informed that they were likely to complete four unrelated tasks within the 30 minutes. Instead of signed informed consent, participants' voluntary act of clicking on the "Accept HIT" button and filling out the questionnaire replaced constituted informed consent.

After being instructed about this online study and agreeing to participate,

participants were randomly assigned to one of the following four experimental conditions: 1) the happy condition, 2) the hopeful condition, 3) the angry condition, and 4) the fearful condition. In Study 2, experimental induction of emotion was manipulated by combining a news story task with an autobiographical recall task. The emotion-induction procedure consisted of the first and second task.

In the first task, participants were asked to read news stories, which had been found to be effective in the first pretest. In the happy condition, participants read the Batkid story while those in the hopeful condition read the story about Avery Walker, who overcame acute lymphoblastic leukemia, a blood cancer that can be deadly within a few months if not treated. Participants in the angry condition read the news stories about Norwegian mass-killer Anders Behring Breivik and his jail complaints. To induce the feeling of fear, participants in the fearful condition read the news story illustrating Boston Marathon bombings and pressure cooker bombs.

After reading the news stories, participants were asked to complete the self-report emotion form in which they rated the extent to which they felt for each of 18 separate emotion terms (angry, happy, disturbing, optimistic, sad, fearful, irritated, hopeful, frustrated, scared, excited, afraid, cheerful, nervous, inspired, hostile, downhearted, delighted) (Goldberg, Lerner, and Tetlock, 1999; Gross and Levenson, 1995; Lerner and Keltner 2001). This self-report form included more emotion terms aimed to make the emotion manipulation check disguised and to minimize participants' hypothesis guessing.

The second task on emotional memories, which served as the second part of the combined induction procedure, was introduced. To reduce participant fatigue, instead of the induction procedure employed in Study 1, a relatively short imagery technique developed by Lerner and Keltner (2001) was used for this experiment. The emotion induction initially instructed participants to answer two open-ended questions as truthfully as possible. The first question asked participants to briefly describe two personal events that made them feel happy (hopeful, angry, fearful). The second question asked participants to describe in more detail "the one event that has made you most happy (hopeful, angry, fearful)" (see Appendix A). Immediately, after describing the event, participants responded to a shortened version of Smith and Ellsworth's (1985) appraisal questionnaire, which consisted of five items. This shortened appraisal questionnaire served as a manipulation check. All of these items were measured on 7-point scales ranging from 1(not at all) to 7 (extremely).

The third task aimed to evaluate if temporarily induced emotion would exert a direct influence on participants' level of mental construal. Participants were asked to complete a BIF questionnaire. The same instruction and questionnaire used in Study 1 was provided to the participants for this task. They were instructed to choose one of two descriptions of the 19 behaviors (e.g., reading), one that comprises higher-level construals related to why considerations (e.g., gaining knowledge) and the other that comprises lower-level construals related to how considerations (e.g., following lines of

print).

Next, participants were instructed to read another instruction for the “fourth” task. Participants were instructed to indicate the extent to which four events would happen to them compared to other individuals of the same sex and age (see Appendix B). The four events adopted from Chambers, Windschitl, and Suls (2003) are low-frequency undesirable and uncertain events. Lastly, participants responded to basic demographic questions and completed this task by obtaining their task confirmation code.

Measures

Construal Level. The same 19-item BIF questionnaire in Study 1 was used to evaluate participants’ tendency to construe given information at a high versus low level (Vallacher and Wegner, 1989; Liberman and Trope, 1998).

Likelihood Estimate. Instead of the four items employed in Study 1, a four-item 7-point Likert scale developed by Chambers, Windschitl, and Suls (2003) was adapted and served as a dependent variable in Study 2. This scale consists of negative and uncertain future events (see Appendix B). All of the four items were evaluated on 7-point scales ranging from 1 (very unlikely) to 7 (very likely). Participants’ responses for the four items were averaged to form a composite uncertain judgment measure (Cronbach’s $\alpha = .72$)

Results

Manipulation Check

Emotion Induction. To ensure that different news stories were successful in inducing emotions, participants' responses for the happy, cheerful and delighted items were averaged to form a composite Happiness Index (Cronbach's $\alpha = .96$). Their responses for the angry and irritated items were averaged to form a composite Anger Index (Cronbach's $\alpha = .90$). I averaged responses for the fearful, scared, and afraid items to form a composite Fear Index (Cronbach's $\alpha = .98$). Participants' averaged responses for the hopeful and optimistic items formed a composite Hope Index (Cronbach's $\alpha = .96$).

A series of one-way ANOVAs were performed to examine the effect of each new story on emotion induction. The manipulation checks data supported that the differences among the four emotion conditions were statistically significant (See Table 4.5). A one-way ANOVA on the Happiness Index revealed that participants reading the Batkid story felt happier than did those reading other news stories ($F(3, 137) = 208.07, p < .001$; $M_{\text{happiness}} = 5.73$ vs. $M_{\text{hope}} = 5.01, M_{\text{anger}} = 1.39, M_{\text{fear}} = 1.13, p < .05$). Participants in the anger condition indicated that they felt angrier than did those in other three conditions ($F(3, 137) = 193.25, p < .001$; $M_{\text{anger}} = 5.82$ vs. $M_{\text{happiness}} = 1.13, M_{\text{hope}} = 1.29, M_{\text{fear}} = 4.91, p < .01$).

Participants reading the news story about Avery Walker who had overcome a deadly disease felt more hopeful than did those in three other conditions ($F(3, 137) = 173.91, p < .001$; $M_{\text{hope}} = 5.96$ vs. $M_{\text{happiness}} = 5.21, M_{\text{anger}} = 1.43, M_{\text{fear}} = 1.63, p < .05$). Lastly,

a one-way ANOVA on the Fear Index showed the news story about the Boston Marathon bombings made participants feel more fearful than those in other conditions ($F(3, 137) = 144.67, p < .001; M_{\text{fear}} = 6.05$ vs. $M_{\text{happiness}} = 1.26, M_{\text{hope}} = 1.66, M_{\text{anger}} = 1.68, p < .05$).

News Story	Happy		Hopeful		Angry		Fearful	
	M	SD	M	SD	M	SD	M	SD
Breivik & His Complaints	1.38	0.91	1.43	1.02	5.82	1.12	1.68	1.23
Batkid in San Francisco	5.73	1.02	5.21	0.99	1.13	0.61	1.26	0.75
Boston Marathon Bombings	1.13	0.34	1.63	1.16	4.91	1.40	6.05	1.32
Avery Walker over Leukemia	5.00	1.36	5.96	1.08	1.29	0.86	1.66	1.03

Table 4.5: News Stories & Emotion Induction

Valence & Certainty. As explained previously, Smith and Ellsworth's (1985) appraisal questionnaire with regard to the certainty and valence appraisal dimension was employed to verify manipulation of emotion induction. The three certainty items were averaged to form a Certainty Index (Cronbach's $\alpha = .62$), and the two valence items were averaged to form a Valence Index (Cronbach's $\alpha = .97$). The Cronbach's alpha coefficient of the certainty measure was .62 and was above the acceptable value of .6 (Hair et al., 2006; Kaiser, 1974). According to Hair et al., (2006), Cronbach's alpha values from .6 to .7 are deemed to be the lower limit of acceptability.

A one-way ANOVA on the Valence Index showed the predicted difference between positive and negative emotions ($F(3, 137) = 177.67, p < .001; M_{\text{happy}} = 6.39, M_{\text{hopeful}} = 5.28$ vs. $M_{\text{angry}} = 1.22, M_{\text{fearful}} = 1.13, p < .01$). Another one-way ANOVA on the Certainty Index showed significant differences among participants in the four emotion

conditions ($F(3, 137) = 19.47, p < .001; M_{\text{happy}} = 5.36, M_{\text{hopeful}} = 4.09, M_{\text{angry}} = 4.56, M_{\text{fearful}} = 3.26$). In particular, participants who had undergone the happy ($M_{\text{happy}} = 5.36$) induction rated their happy experience as more certain than did those who had undergone the hopeful ($M_{\text{hopeful}} = 4.09$), angry ($M_{\text{angry}} = 4.56$), and fearful ($M_{\text{fearful}} = 3.26$) inductions ($p < .01$). In contrast, participants in the fearful condition had lower ratings in the Certainty Index than did those in other conditions ($p < .01$). The ratings in the Certainty Index between participants in the angry and hopeful conditions were not significantly different ($p > .35$).

Hypothesis Testing

The hypothesized effect of emotion on construal level was retested via a single-factor ANOVA for BIF scores. The result demonstrated there were significant differences in the BIF scores between the four emotional conditions ($F(3, 137) = 11.15, p < .01, \eta^2 = .20$). Subsequent contrast analysis using Tukey's procedure revealed that participants in the fear condition had higher BIF scores ($M_{\text{fearful}} = 14.47$) relative to those who were induced to feel happy ($M_{\text{happy}} = 8.14, p < .01$), angry ($M_{\text{angry}} = 11.58, p < .05$), and hopeful ($M_{\text{hopeful}} = 11.47, p < .05$). In contrast, participants in the happiness condition provided significantly lower BIF scores than did those in other three conditions ($M_{\text{happy}} = 8.14$ vs. $M_{\text{hopeful}} = 11.47, M_{\text{angry}} = 11.58, M_{\text{fearful}} = 14.47, p < .05$). The BIF scores between participants in the anger and hope condition were not significantly different ($M_{\text{angry}} = 11.58$ vs. $M_{\text{hopeful}} = 11.47, p > .95$). Table 6 presents the differences in the BIF scores

between the four conditions. These results partially supported the first hypothesis.

Contrast	Mean Difference	<i>p</i> -value	95% Confidence Interval
Happiness vs. Hope	3.33*	< .05	0.52, 6.14
Happiness vs. Anger	3.44*	< .05	0.63, 6.25
Happiness vs. Fear	6.33*	< .01	3.48, 9.18
Hope vs. Angry	0.11	> .99	-2.90, 2.68
Hope vs. Fear	3.00*	< .05	0.17, 5.83
Angry vs. Fear	2.89*	< .05	0.06, 5.72

Table 4.6: Differences in Means for the BIF Scores in Study 2

The second hypothesis proposed that uncertainty related emotions would lead individuals to increase their likelihood estimates for uncertain events compared to certainty related emotions. A single-factor ANOVA was run on the Likelihood Estimate Index, and the results showed that participants' likelihood judgment about the uncertain events significantly varied with their emotional states ($F(3, 137) = 13.21, p < .01, \eta^2 = .22$).

In particular, participants in the fear condition had significantly higher ratings of the likelihood estimate measure than did those in other emotion conditions ($M_{\text{fearful}} = 4.59$ vs. $M_{\text{happy}} = 3.27, M_{\text{angry}} = 3.98, M_{\text{hopeful}} = 3.86, p < .05$). In contrast, participants in the happiness condition judged that the uncertain future events would be less likely to occur than did those in the hope ($M_{\text{happy}} = 3.27$ vs. $M_{\text{hopeful}} = 3.86, p < .05$), anger ($M_{\text{happy}} = 3.27$ vs. $M_{\text{angry}} = 3.98, p < .01$), and fear ($M_{\text{happy}} = 3.27$ vs. $M_{\text{fearful}} = 4.59, p < .01$) condition. However, ratings of the likelihood estimate measure between participants in the anger

and hope condition were not significantly different ($p > .90$). Table 7 presents the differences in ratings of the likelihood estimate measure between the four conditions.

These results partially supported the second hypothesis.

Contrast	Mean Difference	<i>P-value</i>	95% Confidence Interval
Happiness vs. Hope	0.59*	< .05	0.05, 1.13
Happiness vs. Anger	0.71*	< .01	0.17, 1.25
Happiness vs. Fear	1.32*	< .01	0.77, 1.86
Hope vs. Angry	0.12	> .90	-0.65, 0.42
Hope vs. Fear	0.73*	< .01	0.18, 1.27
Angry vs. Fear	0.61*	< .05	0.07, 1.15

Table 4.7: Differences in Means for the Likelihood Estimate Measure in Study 2

Discussion

Instead of the imagery induction technique, the combined emotion-induction procedure was employed in Study 2. By combining emotion-induction news stories with the recollection of emotion-related personal experiences, Study 2 intended to minimize extra variability in participants' emotional states induced and the likelihood of demand artifacts. This experimental study retested the hypothesized effects of certainty (uncertainty) related emotions on construal levels and likelihood estimates. Study 2 replicated the results of Study 1 and partially supported the first and second hypothesis.

The results across the two studies show that the certainty appraisal content of emotions should be influential enough to affect subsequent cognitive processing and judgment. As in Study 1, fear, which is strongly associated with uncertainty appraisal,

caused individuals to represent objects and actions at a more abstract level and to increase their likelihood estimates for negative uncertain events. In contrast, happiness distinguished from the other three emotions by strong certainty appraisal led individuals to represent objects and actions at a more concrete level and to decrease their likelihood estimates for negative uncertain events. Contrary to the predictions, anger and hope were not significantly different in BIF scores and ratings of the likelihood estimates.

Further, fear and hope have been deemed to be associated with uncertainty, signaling individuals to feel unsure of what is happening in the current situation and about what will happen next (Smith and Ellsworth, 1985; Tiedens and Linton, 2001). Compared to fear, hope, however, appears to be less related to uncertainty and to be less influential in processing information and making judgments in a certainty-congruent manner. According to the results of Study 2, anger seems to be less associated with certainty relative to happiness, and the certainty appraisal content of anger is not as influential as that of happiness. These findings are consistent with previous appraisal research suggesting the certainty appraisal content of anger and hope is less salient compared to the other emotions (e.g. happiness, fear) (Ellsworth and Smith, 1988; Frijda, Kuipers, ter Schure, 1989; Tesser, 1990).

The results of Study 1 and Study 2 suggest that certainty rather than valence can play a more important role in determining the levels of mental construal and likelihood estimates for negative, uncertain events. For instance, happiness and hope, which are both

positive emotions, resulted in significantly different BIF scores and likelihood estimates. In a similar vein, participants in the anger and fear condition showed significant differences in construal levels and likelihood estimates. These results show the limitations of the valence-based approach when investigating the effects of emotional states on construal levels and related judgments.

The next study extended the above findings by investigating the effects of the four emotions on responses to advertising messages presented at either a high or level of construal. Before the main experiment for Study 3, two pretests were conducted for selecting a product (Pretest II) and developing ad messages to describe product benefits and attributes at different construal levels. (Pretest III).

STUDY 3

Overview

The findings of Study 1 and Study 2 indicate that uncertainty related emotion is more likely to increase abstract, high-level construal, while certainty related emotion is more likely to result in concrete, low-level construal. Extending these findings, the objective of Study 3 was to empirically examine the fit between emotions and construal levels enhance the effectiveness of advertising. My prediction was that individuals primed to feel uncertainty related emotion would be more favorable toward an advertising message representing the desirability of the advertised product (high-level

construal) rather than the feasibility of the product (low-level construal) and that the opposite would be found for those primed to feel certainty related emotion. Pretest III aimed to develop two different messages representing product benefits at different construal levels.

Pretest II: Product Selection

As suggested by previous research, it is desirable for products to not be too familiar to subjects in order to control for the effect of familiarity on advertising messages (Kent and Allen, 1994). A brief pretest was thus administrated with 38 participants. It measured familiarity of several products by adopting and modifying Kent and Allen's (1994) two items on "How familiar are you with _____?" and "How knowledgeable are you about _____?" These two items were evaluated on 7-point scales ranging from 1(Not at all) to 7(Extremely) and were averaged to a composite familiarity measure. Elliptical trainers were chosen as a target product for two reasons. First, as indicated, individuals were not too familiar with elliptical trainers compared with other products (See Table 8). Second, it was found that elliptical trainers' benefits could be easily described in terms of either desirability or feasibility (Lee, Keller, and Sternthal, 2010).

Product Category	Minimum	Maximum	Mean	SD
Vacuum Cleaner	4.00	7.00	5.87	0.82
DSLR Camera	1.00	7.00	3.08	1.89
Running Shoes	2.00	7.00	4.87	1.58
Popcorn	4.50	7.00	6.13	0.75
Treadmill	2.00	7.00	5.16	1.31
Elliptical Trainer	1.50	7.00	4.22	1.73
Streaming Media Player	2.00	7.00	5.27	1.16

Table 4.8: Product Familiarity

Pretest III: Choice of Advertising Messages

From the perspective of construal level theory (Trope and Liberman, 2010), a high-level construal ad focuses on desirability, highlighting why one should use the advertised product to achieve desired benefits. Whereas, a low-level construal ad focuses on feasibility, stressing how one can effectively use the product's tangible features. By adapting the stimuli used in the previous research study by Lee, Keller, and Sternthal (2010), two ad messages with different construal levels were produced

First, a fictitious brand (The Trekstar A40) was created for experimental purposes in order to eliminate prior familiarity with, and attitude toward existing brands and products. By adapting the stimuli used by previous research (Lee, Keller, and Sternthal, 2010), a high-level construal ad message for the Trekstar A40 elliptical trainer had a headline, "THE ULTIMATE AEROBIC MACHINE FOR A GREAT WORKOUT!" followed by a subheadline, "WHY EXERCISE?" The ad message focused on two benefits that addressed high-level concerns of why one would exercise: "The A40 gives

your body complete conditioning while you achieve cardiovascular training” and “It ensures that you get buff” (Lee, Keller, and Sternthal, 2010; Trope, Liberman, Wakslak, 2007) (see Figure 4.2)

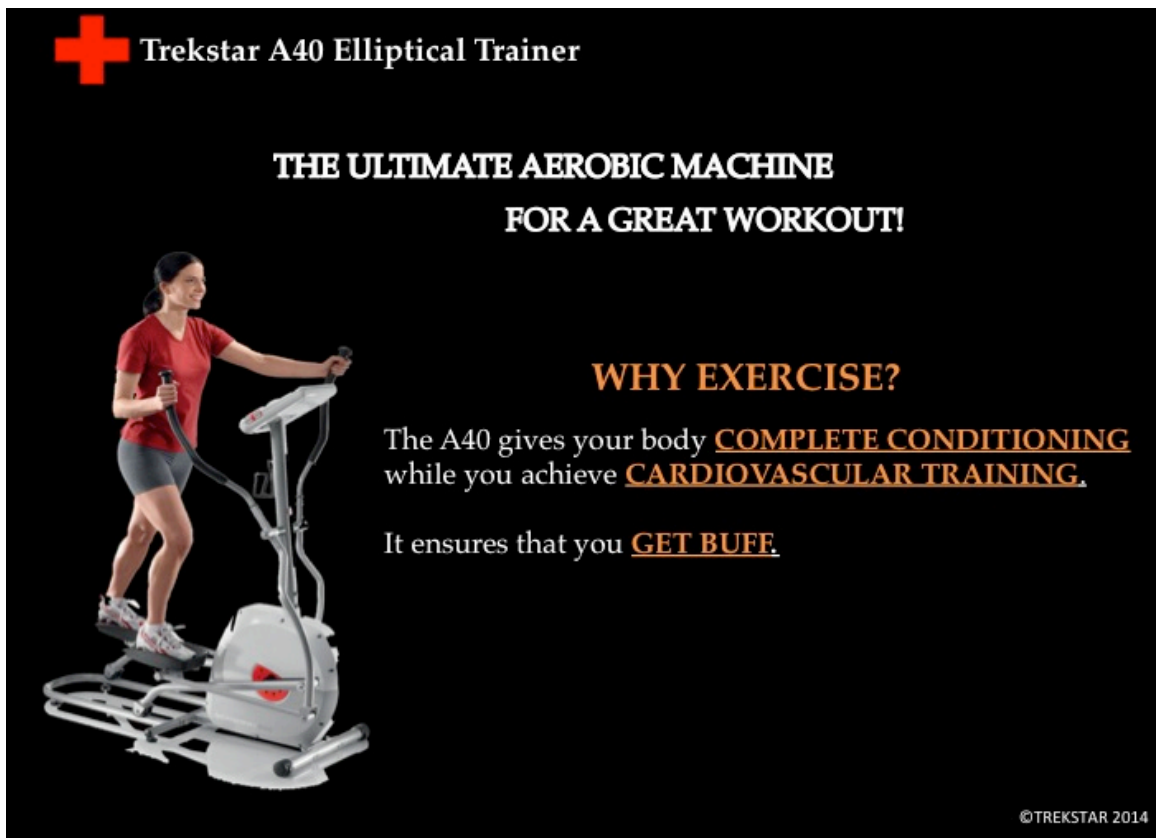


Figure 4.2: High-level Construal Ad for Study 3

On the other hand, a low-level construal ad message for the Trekstar A40 began with “THE ULTIMATE AEROBIC MACHINE WITH THE RIGHT FEATURES!” and “HOW TO EXERCISE?” The ad messages emphasized how some features of the A40 worked for its users: “no-impact stepper designed to cushion each step” and “multiple

incline setting complements the precise, patented geometry of the stride” (see Figure 4.3).

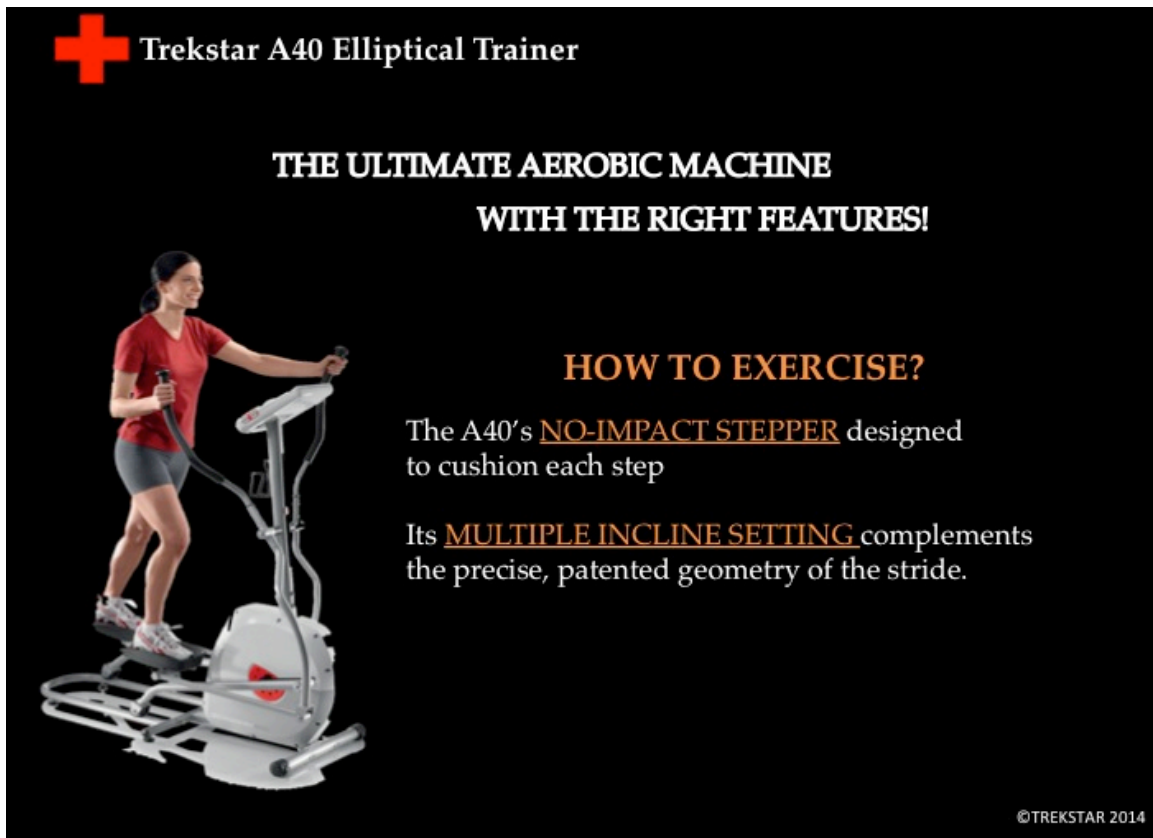
The advertisement features a black background. In the top left corner is a red cross logo followed by the text "Trekstar A40 Elliptical Trainer". Centered below this is the headline "THE ULTIMATE AEROBIC MACHINE WITH THE RIGHT FEATURES!". On the left side, a woman in a red shirt and grey shorts is shown using the elliptical machine. To the right of the woman, the text "HOW TO EXERCISE?" is written in orange. Below this, two paragraphs describe the machine's features: "The A40's NO-IMPACT STEPPER designed to cushion each step" and "Its MULTIPLE INCLINE SETTING complements the precise, patented geometry of the stride." In the bottom right corner, there is a small copyright notice: "©TREKSTAR 2014".

Figure 4.3: Low-level Construal Ad for Study 3

For this pretest, 28 AMT workers were recruited. Among the participants, 67.9% (n=19) were male and 32.1% (n=9) were female. The participants' ages ranged from 21 to 58 with an average of 34. Participants were randomly assigned to one of the two ad message conditions. Half of the participants were exposed to the high-construal ad message and the other half of the participants were presented with the low-construal ad message.

After reviewing the ad messages, all the participants were subsequently asked to indicate the extent to which they agreed or disagree with the two statements for a manipulation check: “The ad for the A40 focuses more on the ideas about the advantages its buyers achieve after using it” and “The ad for the A40 focuses more on the ideas about the features its buyers use while doing a workout on it.”

They also evaluated the ads and the advertised brand by responding to a series of questions. The lead-in question for measuring attitudes toward the ad read, “How do you feel about the ad message for the Trekstar A40?” Participants’ responses were measured on a list of 9-point seven semantic differential items. The items were anchored by “bad/good,” “ineffective/effective,” “not impactful/impactful,” “not informative/informative,” “useless/useful,” “not persuasive/persuasive,” “not attractive/attractive” (Bezjian-Avery, Calder, and Iacobucci, 1998; Hong and Lee, 2008; Martin, Lee, and Yang, 2004; Williams and Drolet, 2005) (Cronbach’s $\alpha = 0.93$). These items were averaged to form a composite ad attitude measure.

Attitudes toward the Trekstar A40 were captured on a five-item, nine-point semantic differential scale. These five items were anchored by “bad/good,” “not attractive/attractive,” “undesirable/desirable,” “unfavorable/favorable,” “unnecessary/necessary” (Babin and Burns, 1997; Lepkowska-White, Brashear, and Weinberger, 2003; Sengupta and Johar, 2002) (Cronbach’s $\alpha = 0.90$). I averaged these five items to construct a composite brand attitude measure.

To ensure that both the high-level and low-level ad messages were successfully

manipulated through framing the desired benefits and concrete features, participants were asked (1) “The ad focuses more on the ideas about the benefits the A40 buyers achieve by using it,” and (2) “The ad focuses more on the ideas about the features A40’s buyers use while doing a workout on it.” The participants responded on a seven-point scale (1 = strongly disagree; 7 = strongly agree).

Participants in the high-construal ad condition perceived that the ad conveying desired benefits focused more on the advantages the Trekstar A40’s users could achieve as opposed to the features the Trekstar A40 would provide to its users ($M_{\text{High-construal}} = 5.21$ vs $M_{\text{Low-construal}} = 3.50$, $t(27) = 3.76$, $p < .01$). In contrast, the reverse pattern for subjects in the low-construal ad condition was significant ($M_{\text{Low-construal}} = 6.00$ vs. $M_{\text{High-construal}} = 3.64$, $t(27) = 3.94$, $p < .01$). As expected, these results indicated that participants clearly understood the meaning of these two ads.

However, since the objective of Study 3 was to explore the interaction between emotional states and ad messages framed at different construal levels, these two ads were intended to have similar ratings of the ad attitude and brand attitude measure.

Independent samples t-tests on the ad attitude and brand attitude measure were conducted.

The results showed that the two ads were not significantly different in the ad attitude measure ($M_{\text{High-construal}} = 5.87$ vs. $M_{\text{Low-construal}} = 5.90$, $t(27) = .06$, $p > .95$) and the brand attitude measure ($M_{\text{High-construal}} = 6.00$ vs. $M_{\text{Low-construal}} = 6.34$, $t(27) = .82$, $p > .40$). Thus, it was expected that the main effect of ad messages would not be significant in the main experiment study.

Main Experiment Design

The third hypothesis was tested using a 2 (ad message framing: desirability vs. feasibility) x 4 (emotion: happiness, hope, anger, fear) between-subjects design. The first independent variable was ad message framing. The two ad messages developed and pretested in Pretest III were used for this experimental study. The second independent variable was momentarily induced emotional states. Participants' emotional states were manipulated by the same combined induction procedure explained in Study 2.

Subjects

A total of 179 AMT workers who did not participate in the previous pretests and experiments were recruited. They came from the general population and completed the tasks and questionnaires for Study 3. Among the participants, 54.2% (n=97) were male and 45.8% (n=82) were female. The participants' ages ranged from 18 to 74 with an average of 36. Table 4.9 presents the demographic characteristics of the sample.

Demographic Characteristics	Frequency	Percentage
Gender		
Male	97	54.2
Female	82	45.8
Age		
19-29	67	37.4
30-39	50	27.9
40-49	31	17.3
50-59	18	10.1
60+	13	7.3
Education		
Less than High School	1	0.6
High School/GED	26	14.5
Some College	49	27.4
2-year College Degree	25	14.0
4-year College Degree	58	32.4
Master's Degree	15	8.4
Doctoral Degree	3	1.7
Professional Degree (JD, MD)	2	1.1

Table 4.9: Sample Demographics from Study 3

Procedure

Like previous pretests and experimental studies, this experimental study was carried out online. Before the participants had access to the study site, they were informed that they were likely to complete three unrelated tasks within the 30 minutes. Instead of signed informed consent, participants' voluntary act of clicking on the "Accept HIT" button and filling out the questionnaire constituted informed consent.

After being instructed about this online study and agreeing to participate, participants were randomly assigned to one of the following eight experimental conditions: 1) the happy and high-construal ad condition, 2) the happy and low-construal ad condition 3) the hopeful and high-construal ad condition, 4) the hopeful and low-construal ad condition 5) the angry and high-construal ad condition, 6) the angry and low-construal ad condition, 7) the fearful and high-construal ad condition, and 8) the fearful and low-construal ad condition.

Four emotional states (happiness, hope, anger, fear) were induced using the combined emotion-induction procedures explained Study 2. Participants were instructed to complete a news story task and an autobiographical recall task. In the third task, half the participants in each emotional condition were asked to review the high-construal ad for the Trekstar A40. The others were asked to review the low-construal ad for the Trekstar A40. After reviewing the ad, all the participants were subsequently instructed to answer a series of questions for the assessment of the dependent variables evaluating their attitudes towards ads and brands, as well as purchase intentions. In addition, the participants responded to questions to measure their involvement with and knowledge about elliptical trainers (product involvement, product knowledge) and provided their demographic information. Lastly, they were thanked for their participation and obtained their confirmation code for their wage.

Measures

Ad Attitude. The dependent variables assessed the interactive effect between emotional states and advertising messages describing product benefits at different construal levels. In particular, participants' attitudes toward the two ads were captured on a four-item, seven-point semantic differential scale anchored by "bad/good," "ineffective/effective," "not informative/informative," "not persuasive/persuasive" (Bezjian-Avery, Calder, and Iacobucci, 1998; Martin, Lee, and Yang, 2004; Williams and Drolet, 2005). These four items were chosen because they were used more frequently in previous research on advertising. These items were averaged to an Ad Attitude Index (Cronbach's $\alpha = 0.89$).

Brand Attitude. Attitudes toward the Trekstar A40 were assessed on four seven-point semantic differential items. These items were anchored by "bad/good," "not attractive/attractive," "undesirable/desirable," "unfavorable/favorable" (Lepkowska-White, Brashear, and Weinberger, 2003; Sengupta and Johar, 2002) and were averaged to form a Brand Attitude Index (Cronbach's $\alpha = 0.96$).

Purchase Intention. Participants' purchase intentions were captured on a three-item, seven-point semantic differential scale by asking how "unlikely/likely," "uncertain/certain," and "impossible/possible" it was that they would purchase the Trekstar A40 if they were in the market for elliptical trainers. The three items were averaged to form a Purchase Intention Index (Cronbach's $\alpha = 0.84$).

Covariates. Two potential covariates were measured to control for extraneous

variation in the data using analysis of covariance—product involvement and product knowledge. Since a consumer's product involvement and product knowledge influence his or her processing of new and product-related information (Johnson and Russo, 1984; Petty, Cacioppo, and Schumann 1983), it appeared to be important to explore whether the proposed interaction effect between emotional states and advertising messages construed at different levels on persuasion was robust regardless of the two covariates.

Product involvement was measured on three, seven-point Likert items (“I have a strong interest in elliptical trainers,” “Elliptical trainers matter a lot to me,” “I get bored when other people talk to me about elliptical trainers”) (Bloch, 1981; Srinivasan and Ratchford, 1991). These items were averaged to form a composite product involvement measure (Cronbach's $\alpha = 0.81$). I measured product knowledge on three, seven-point items (“I have a lot of experience with elliptical trainers,” “As compared to the average person, I would say that I am highly knowledgeable about elliptical trainers,” “I would describe myself as being very familiar with elliptical trainers”). These items were also adopted from Srinivasan and Ratchford (1991) and were averaged to form a composite product knowledge measure (Cronbach's $\alpha = 0.93$).

Results

Manipulation Check

Emotion Induction. To verify the emotion induction effect of the four news stories,

participants' responses for the happy, cheerful items were averaged to form a Happiness Index (Cronbach's $\alpha = .96$). Their responses for the angry and irritated items were averaged to form an Anger Index (Cronbach's $\alpha = .90$). I averaged responses for the fearful, scared, and afraid items to forms a Fear Index (Cronbach's $\alpha = .98$). Participants' averaged responses for the hopeful and optimistic items were averaged to form a Hope Index (Cronbach's $\alpha = .96$).

A series of one-way ANOVAs were performed to examine the effect of each new story on emotion induction. Like Study 2, the news stories induced participants' emotional states at a significant level. Participants in the happy condition felt happier than did those in other conditions ($M_{\text{happy}} = 5.85$ vs. $M_{\text{hopeful}} = 4.74$, $M_{\text{angry}} = 1.20$, $M_{\text{fearful}} = 1.31$; $F(3, 175) = 197.13$, $p < .001$). Participants in the hopeful condition felt more hopeful than did those in three other conditions ($M_{\text{hopeful}} = 5.87$ vs. $M_{\text{happy}} = 5.13$, $M_{\text{angry}} = 1.42$, $M_{\text{fearful}} = 1.79$; $F(3, 175) = 190.13$, $p < .001$). Participants induced to feel angry had higher ratings of the Angry Index than did those induced to feel happy, hopeful, and fearful ($M_{\text{angry}} = 5.31$ vs. $M_{\text{happy}} = 1.19$, $M_{\text{hopeful}} = 1.26$, $M_{\text{fearful}} = 4.67$; $F(3, 175) = 180.05$, $p < .001$). Participants reading the fearful Boston Marathon bombing story showed higher levels of the Fearful Index than did those reading other stories ($M_{\text{fearful}} = 5.71$ vs. $M_{\text{happy}} = 1.23$, $M_{\text{hopeful}} = 1.37$, $M_{\text{angry}} = 1.73$; $F(3, 175) = 182.77$, $p < .001$).

Certainty & Valence. The effect of the recollection of personal experience was evaluated on Smith and Ellsworth's (1985) certainty and valence appraisal items. The

first three certainty items were averaged to for a Certainty Index (Cronbach's $\alpha = .73$), and the two valence items were averaged to from a Valence Index (Cronbach's $\alpha = .95$).

A one-way ANOVA was run on the Certainty Index, and the result revealed significant differences among participants in the four emotion conditions ($F(3, 175) = 17.39, p < .001$). In particular, participants who were induced to feel happy ($M_{\text{happy}} = 5.16$) provided significantly higher ratings in the Certainty Index than did those induced to feel hopeful ($M_{\text{hopeful}} = 4.40$), angry ($M_{\text{angry}} = 4.18$), and fearful ($M_{\text{fearful}} = 3.36$) ($p < .01$). By contrast, participants induced to feel fearful had significantly lower ratings in the Certainty Index than did those in other conditions ($p < .01$), and their scores were only in the lower portion of the Certainty Index. However, the difference in the Certainty Index scores between participants in the angry and hopeful condition was not significant ($p > .80$). Another one-way ANOVA on the Valence Index showed the difference between positive and negative emotions ($F(3, 175) = 177.67, p < .001$; $M_{\text{happy}} = 6.42, M_{\text{hopeful}} = 4.21$ vs. $M_{\text{angry}} = 1.34, M_{\text{fearful}} = 1.51, p < .01$).

Message Framing. As a check on construal level manipulation, four Likert items were used: “(1) The ad message emphasizes the desired effects which the A40's users expect by using it,” (2) “The ad message emphasizes the functional features with which the A40 provides its users,” (3) “The ad focuses more on the ideas about the benefits the A40 buyers achieve after using it,” (4) “The ad focuses more on the ideas about the features A40's buyers use while doing a workout on it.” Responses ranged from 1

(strongly disagree) to 7 (strongly agree). The responses for the first and third item were averaged to form a Desirability Index (Cronbach's $\alpha = .86$) while the responses for the remaining items were averaged to form a Feasibility Index (Cronbach's $\alpha = .84$).

Subjects in the high-level construal ad condition had higher ratings of the Desirability Index than did those in the low-level construal ad condition ($M_{\text{Desirability}} = 5.61$ vs. $M_{\text{Feasibility}} = 3.47$; $t = 10.78, p < .001$). In contrast, subjects in the low-level construal ad condition perceived that the ad emphasizing the Trekstar A40's features pertained to how it would work ($M_{\text{Feasibility}} = 5.60$ vs. $M_{\text{Desirability}} = 3.55$; $t = 9.97, p < .001$). Thus, the construal framing manipulation was successful.

Hypothesis Testing

First, the zero-order correlations among the three dependent variables and one covariate were examined (see Table 4.10). All variables except product knowledge were significantly positively correlated with one another at the .01 level. Because the perceived product knowledge measure was only correlated with the product involvement measure, it was not incorporated for the further analysis (i.e. ANCOVA).

	Ad Attitude	Brand Attitude	Purchase Intentions	Product Involvement	Product Knowledge
Ad Attitude		.83*	.67*	.22*	.06
Brand Attitude			.70*	.30*	.10
Purchase Intentions				.31*	.05
Product Involvement					.72*
Product Knowledge					

* Notes: significant at the .01 level (2-tailed). n = 179 for all tests.

Table 4.10: Correlations between Dependent Variables and Covariates

Three separate 2 (construal level: high-level vs. low-level) x 4 (emotion: happiness, hope, anger, fear) ANOVAs were conducted for each of the dependent measures (i.e., ad attitude, brand attitude, purchase intention). The results yielded no significant main effects for emotion and construal level. However, the interaction of construal level and emotion was significant for ad attitude ($F(3, 171) = 9.57, p < .01$), brand attitude ($F(3, 171) = 9.03, p < .01$), and purchase intent ($F(3, 171) = 8.77, p < .01$) as shown in Table 4.11.

Dependent variables	Factor	<i>df</i>	<i>F</i> -value	<i>p</i> -value	Partial η^2
Ad Attitude	Emotion	3	1.53	.21	.03
	Construal	1	.03	.87	.00
	Emotion x Construal	3	9.57	.00	.15
Brand Attitude	Emotion	3	2.10	.10	.04
	Construal	1	.32	.57	.00
	Emotion x Construal	3	9.03	.00	.14
Purchase Intention	Emotion	3	1.70	.17	.03
	Construal	1	.02	.89	.00
	Emotion x Construal	3	8.77	.00	.13

Table 4.11: Univariate Analysis of Variance Results from Study 3

Follow up contrasts revealed that the effects were in the hypothesized directions. Participants in the fear condition rated the high-level construal ad message focusing on desirability more positively ($M_{\text{ad attitude}} = 5.11$, $M_{\text{br attitude}} = 5.58$, $M_{\text{pi}} = 5.05$) than the low-level construal ad focusing on feasibility ($M_{\text{ad attitude}} = 3.70$, $M_{\text{br attitude}} = 4.15$, $M_{\text{pi}} = 3.71$) ($p < .01$). By contrast, for participants in the happiness condition, the low-level construal ad was rated more favorably ($M_{\text{ad attitude}} = 5.24$, $M_{\text{br attitude}} = 5.43$, $M_{\text{pi}} = 5.16$) than the high-level construal ad ($M_{\text{ad attitude}} = 3.88$, $M_{\text{br attitude}} = 4.22$, $M_{\text{pi}} = 3.80$) ($p < .01$). However, the responses of participants in the hope and anger condition to the high-level and low-level construal ad message were not significantly different ($ps < 1.0$). Table 4.12 presents the cell means for the dependent measures.

	Happiness		Hope		Anger		Fear	
	HLCA	LLCA	HLCA	LLCA	HLCA	LLCA	HLCA	LLCA
Ad attitudes ($\alpha = 0.89$)	3.88	5.24	4.15	4.00	4.10	4.18	5.11	3.70
Brand attitudes ($\alpha = 0.96$)	4.22	5.43	4.61	4.33	4.29	4.38	5.58	4.15
Purchase intentions ($\alpha = 0.84$)	3.80	5.16	4.04	4.02	3.96	4.06	5.05	3.71
N	22	21	25	22	23	21	22	23

*HLCA = High-level Construal Ad/ LLCA = Low-level Construal Ad

Table 4.12: Cell Means and Sample Sizes

In addition, a series of 2 (construal level: high-level vs. low-level) x 4 (emotion: happiness, hope, anger, fear) ANCOVAs with the product involvement measure were conducted. The results yielded no significant main effects for emotion and construal level. The interaction of construal level and emotion was still significant for ad attitude ($F(1, 170) = 8.56, p < .01$), brand attitude ($F(1, 170) = 7.89, p < .01$), and purchase intent ($F(1, 170) = 7.98, p < .01$). The cell means for the dependent variables barely changed.

Discussion

It is worth noting that the persuasiveness of advertising messages presenting product benefits at a low or a high construal level can vary according to the certainty appraisal content of emotions. As shown in Study 1 and Study 2, the certainty

(uncertainty) appraisal components of emotions influence one's construal level.

Consistently, the findings of Study 3 suggest that this certainty appraisal affects one's pursuits of consumption goals construed at different levels (e.g., desirability, feasibility).

The results of Study 3 affirmed that individuals who were induced to feel fearful responded to the high-level construal ad focusing on desirability than the low-level construal ad focusing on feasibility more favorably. The reverse pattern was true for individuals induced to feel happiness. These certainty-congruent effects were not discovered for individuals induced to feel hopeful and angry. These results indicate that fear, which is distinguished from other emotions of the same valance by uncertainty appraisal, leads individuals to focus on the desirability of an advertised product. Thus, for individuals feeling fear, advertising messages illustrating a desired end-state to result from using the advertised product are more persuasive than messages featuring the tangible attributes of the product. On the contrary, happiness, which is distinguished from other emotions of the same valance by certainty appraisal, leads individuals to emphasize the feasibility of the advertised product and to focus on how the product's features are helpful in pursuing imminent and proximal consumption goals.

As discussed earlier, mental construal levels influence one's reliance on alignable versus nonalignable attribute differences (Malkoc, Zauberman, and Ulu, 2005; Malkoc, Zauberman, and Bettman, 2010). Extending this notion, the next experimental study aimed to explore how the certainty appraisal content of emotions has an impact on the

processing of alignable attribute differences versus nonalignable attribute differences in the context of comparative advertising. Before the main experiment for Study 4, three pretests were conducted for selecting alignable attributes and nonalignable attributes between two vacuum cleaner brands (Pretest IV and Pretest V) and for developing ad messages to featuring two different types of product attributes (Pretest VI).

STUDY 4

Overview

In addition to desirability and feasibility, the description of products in ad messages can be differently construed depending on either alignable attributes (common attributes that have different levels across alternatives) or nonalignable attributes (aspects that do not have a corresponding attribute in other alternatives). Further, the findings of previous research studies suggest that individuals with a high-level construal mindset are more likely to compare nonalignable attributes between products although it is more difficult to process them relative to alignable attributes (Malkoc, Zauberma, and Ulu, 2005; Malkoc, Zauberma, and Bettman, 2010). Drawing on this suggestion, the objective of Study 4 was to investigate whether and how consumers' responses to comparative advertising employing different types of product attributes vary according to the certainty appraisal content of emotions. Specifically, Study 4 tested the prediction that individuals primed to feel emotions low on certainty appraisals would evaluate the

nonalignable-better product and its ad message more favorably than the alignable-better product and its ad message. Three pretests were conducted to develop two different types of ad messages.

Pretest IV: Product Attributes

The objective of Pretest IV was to assess the importance of the product attributes in order to create two different ad messages. Vacuum cleaners were chosen as a target product because vacuum cleaners were found to have enough salient attributes to support competitive advertising (Lee and Lee, 2007).

For pretest IV, a total of 63 AMT workers provided ratings of importance for attributes of vacuum cleaners on a seven-point scale (1=not at all important and 7 = extremely important). Table 4.13 displays the attributes of vacuum cleaners and their importance ratings. Based on the ratings, eight attributes (two common, two alignable, and four nonalignable attributes) were selected for vacuum cleaners such that they were equivalent in favorability judgment in terms of ratings of attitudes toward ads and advertised brands. In particular, suction power and manufacturer warranties were selected as common attributes because the differences in the two attributes might significantly make the alignability of the attributes meaningless. Vacuum cleaners' dust collection capacity and filtration systems were chosen as alignable attributes. In addition, to maintain a similar favorability between the two brands, four product attributes (automatic height adjustment, power cord length, electronic dirt sensor, and easy-empty & fingertip-

controlled on/off switch) were picked up as nonalignable attributes.

Product Attributes	Mean	SD
1) Multiple filter systems	4.24	1.28
2) High Efficiency Particulate Air (HEPA) filter system	5.16	1.36
3) Larger dustbin capacity	5.38	0.91
4) 5 brush-height adjustments	4.35	1.50
5) Automatic retractable cord	4.54	1.56
6) Manufacturer warranty period	5.63	1.14
7) Easy empty dirty tank (cup)	4.87	0.99
8) Washable dustbin	5.24	1.16
9) Larger cleaning path	4.89	1.26
10) Washable filter	5.19	1.15
11) Multiple height adjustment	4.40	1.56
12) Automatic height adjustment	3.86	1.46
13) Suction power	6.54	0.71
14) See-through dirt container (tank or cup)	4.25	1.68
15) Fingertip-controlled on/off switch	6.05	1.49
16) Longer power cord	5.35	1.12
17) Automatic power adjustment	4.38	1.31
18) Electronic dirt sensor	3.78	1.46
19) Add-on cleaning tools	4.83	1.43

Table 4.13: Product Attributes and Importance Ratings

Pretest V: Alignable & Nonalignable Attributes

In order to control overall attitude toward the brand (Abr), attitude toward the ad (Aad), Pretest V was conducted with the specific eight product attributes created based on the results from Pretest IV. For instance, vacuum cleaners' 1800 watts suction power and 2-year limit warranty were shared as common attributes. As alignable attributes, vacuum cleaners' dust collection capacity (2.5L vs. 2.25L) and filtration system (HEPA multiple

filter system vs. multiple filter system) were manipulated. To create nonalignable differences, vacuum cleaners' automatic height judgment, electronic dirt sensor, fingertip-controlled on/off switch, and 23 ft. automatic rewind cord were selected. A total of 50 AMT workers ($M_{\text{age}}=24.2$) participated in this pretest and were asked to indicate importance for the ten attributes of vacuum cleaners on a seven-point scale (1=not at all important and 7 = extremely important) (See Table 4.14).

Product Attributes	Mean	SD
1) 1800Watts Max Suction Power	5.14	1.20
2) 2.5L Dust Bin Capacity	5.16	1.41
3) 2.25L Dust Bin Capacity	4.58	1.43
4) Multiple Filter System	5.04	0.95
5) HEPA Multiple Filter System	5.68	1.19
6) Fingertip-controlled On/Off switch	5.60	1.32
7) Electronic Dirt Sensor	4.02	2.10
8) 23ft. Automatic Rewind Power Cord	4.94	1.54
9) Automatic Height Adjustment	4.50	1.12
10) 2 Year Parts & Labor Warranty	5.14	1.48

Table 4.14: Common, Alignable, and Nonalignable Attributes

To explore the differences in the perceived importance of the alignable and nonalignable attributes, a series of one-sample t-tests were conducted. As shown in Table 4.15, participants rated 2.5L dust collection capacity and HEPA multiple filter system as significantly more important than 2.25L dust collection capacity and multiple filter system. For nonalignable attributes, individuals evaluated the vacuum cleaner's fingertip-controlled on/off switch and 23ft. automatic rewind power cord as more important than

its electronic dirt sensor and automatic height adjustment (See Table 4.15).

Contrast	Mean Difference	<i>t-value</i>	<i>p-value</i>
2.5L Dust Bin Capacity vs. 2.25L Dust Bin Capacity	0.58	2.92	< 0.01
HEPA Multiple Filter System vs. Multiple Filter System	0.64	3.82	< 0.01
Fingertip-controlled on/off switch vs. Electronic Dirt Sensor	1.58	8.43	< 0.01
Fingertip-controlled on/off switch vs. Automatic Height Adjustment	1.10	5.87	< 0.01
23-Foot Automatic Rewind Power Cord vs. Electronic Dirt Sensor	0.92	4.21	< 0.01
23-Foot Automatic Rewind Power Cord vs. Automatic Height Adjustment	0.44	2.02	< 0.05

*n = 50

Table 4.15: Differences in Perceived Importance between Product Attributes

Pretest VI: Choice of Two Ad Messages

Based on the results of the two previous pretests, two ad messages for the vacuum cleaners were developed (see Figure 4.4). First, two fictitious vacuum cleaner brands (Pura K380 and Klenp KC480) were created to avoid any confounding with actual brand names because participants might have had different prior experiences with existing vacuum cleaner brands. Second, the Pura K380 and Klenp KC480 shared common attributes (e.g., 1800 watts maximum suction power and 2-year parts and labor warranty). To manipulate alignable differences, the Pura K380's was designed to be better on its

alignable attributes and had greater dust collection capacity and a better filtration system than the Klenp KC480 (2.5L vs. 2.25L dust collection capacity, HEPA multiple filter vs. multiple filter). In contrast, the Klenp KC 480 had better nonalignable attributes relative to the Pura K380 (fingertip-controlled on/off switch, 23 ft. automatic rewind cord vs. automatic height judgment, electronic dirt sensor).

PURA K380	KLENP KC480
 <p>PURA K380</p> <p>EXTREMELY LIGHTWEIGHT EXTREMELY POWERFUL</p> <p>NO WHERE TO HIDE</p> <ul style="list-style-type: none"> ▪ 1,800 WATTS MAX SUCTION POWER ▪ HEPA MULTIPLE FILTRATION FOR MITES & POLLENS ▪ 2.5L DUST COLLECTION CAPACITY <p>CONVENIENTLY CLEAN</p> <ul style="list-style-type: none"> ▪ ELECTRONIC DIRT SENSOR ▪ AUTOMATIC HEIGHT ADJUSTMENT <p>* 2-YEAR PARTS & LABOR LIMITED WARRANTY</p> <p>For more information, please visit our website http://www.pura.com/cleaner/pk380</p> <p>*Available at \$149</p>	<p>KLENP KC480</p> <p>MIGHTY LIGHT VACUUM CLEANER</p> <p>YOUR HOME CLEAN AS NEW!</p> <p>PERFORMANCE</p> <ul style="list-style-type: none"> ✓ 1,800W Suction Power ✓ 2.25L Dust Collection Capacity <p>FRESHNESS</p> <ul style="list-style-type: none"> ✓ Multiple Filter System for Extremely Small Dusts <p>CONVENIENCE</p> <ul style="list-style-type: none"> ✓ Fingertip-controlled on/off switch ✓ 23 Ft. Automatic Rewind Power Cord  <p>* Limited Warranty: 2 Year Parts & Labor</p> <p>* Available at \$149</p>

Figure 4.4: Ad Stimuli for Study 4

Pretest VI was conducted with the two stimulus ads. A total of 28 AMT workers ($M = 32.6$) were recruited and completed this pretest. Pretest VI was administered online.

Upon logging on to the pretest study site, participants were instructed to review two ad messages. Next, participants were asked to rate the reviewed ads based on a four-item, nine-point semantic differential scale for assessing ad attitude, which was used in Study 3 (Cronbach's $\alpha = 0.90$). Participants' attitudes toward two ads messages were not significantly different ($M_{\text{pura}} = 6.46$ vs. $M_{\text{klemp}} = 6.98$; $F(1, 26) = .96, p = 0.36$)

Main Experiment Design

The fourth and fifth hypotheses were tested using a single-factor (i.e., emotion) between-subjects experimental design with ad appeal type (i.e., better alignable attributes, better nonalignable attributes) as a within-subject factor. Four emotions (happiness, hope, anger, fear) were induced by the same combined procedure used in Study 2 and Study 3.

Subjects

A total of 103 AMT workers who did not participate in the previous pretests and experiments were recruited. They came from the general population and completed the tasks and questionnaires for Study 4. Among the participants, 46.6% ($n=48$) were male and 53.4% ($n=55$) were female. The participants' ages ranged from 19 to 73 with an average of 39. Table 4.16 displays the demographic characteristics of the sample of Study 4.

Demographic Characteristics	Frequency	Percentage
Gender		
Male	48	46.6
Female	55	53.4
Age		
19-29	32	31.1
30-39	29	28.2
40-49	19	18.4
50-59	10	9.7
60+	13	12.6
Education		
High School/GED	18	17.5
Some College	36	35.0
2-year College Degree	8	7.8
4-year College Degree	28	27.2
Master's Degree	11	10.7
Doctoral Degree	2	1.9

Table 4.16: Sample Demographics from Study 4

Procedure

Study 4 was carried out online, recruiting AMT workers. A cover story instructing that participants would complete three unrelated, short tasks within 30 minutes was provided in order to minimize the possibility of demand artifacts (Swaminathan, Page, and Gürhan-Canli, 2007). After being instructed about this online study, participants logged on to the study site and were randomly assigned to one of the four experimental conditions: 1) the happiness condition 2) the hope condition 3) the anger condition, and 4) the fear condition.

In Study 4, four emotions (e.g., happiness, hope, anger, fear) were induced using the same combined procedure explained in Study 2. The “first” task induced the four emotions using the news stories, and the “second” task asked participants to recall their personal emotional experience. In the “third” task, participants were asked to review the two ad messages developed in Pretest VI at the same time for more than 45 seconds. After reviewing the ad messages, participants were instructed to indicate their preferences by allocating 100 points between the Klenp KC480 and Pura K380. Subsequently, they were asked to indicate the importance for the ten attributes of vacuum cleaners on a seven-point scale (1=not at all important and 7 = extremely important). Finally, they completed a series of questions to assess their attitudes towards the two ads, followed by a series of ancillary measures including demographic information.

Measures

The dependent variables assessed the effect of emotional state on evaluating alignable and nonalignable differences. These included strength of preference and attitudes toward the two ad messages. Strength of preference was directly measured on participants’ allocation of 100 points between the two vacuum cleaner brands (Malkoc, Zauberaman, and Ulu, 2005). Attitudes toward the Klenp KC480’s ad and Pura K380’s ad were evaluated on a four-item, nine-point semantic differential scale anchored by “bad/good,” “ineffective/effective,” “not informative/informative,” “not persuasive/persuasive” (Bezjian-Avery, Calder, and Iacobucci, 1998; Martin, Lee, and

Yang, 2004; Williams and Drolet, 2005). Participants' responses for these items were averaged to form a single index for the Klenp KC 480 (Cronbach's $\alpha = 0.94$) and the Pura K380 (Cronbach's $\alpha = 0.96$).

Results

Manipulation Check

Emotion. A series of one-way ANOVAs on the Happiness (Cronbach's $\alpha = .97$), Hope (Cronbach's $\alpha = .96$), Anger (Cronbach's $\alpha = .97$), and Fear (Cronbach's $\alpha = .97$) Index were conducted. The emotion-induction manipulation using the news stories was effective. First, participants in the happy condition provided higher ratings of the Happiness Index than did those in other conditions ($M_{\text{happy}} = 6.02$ vs. $M_{\text{hopeful}} = 5.02$, $M_{\text{angry}} = 1.38$, $M_{\text{fearful}} = 1.02$; $F(3, 99) = 240.24$, $p < .001$). Participants in the hopeful condition indicated they felt more hopeful than did those in the happy, angry, and fearful condition ($M_{\text{hopeful}} = 5.98$ vs. $M_{\text{happy}} = 5.21$, $M_{\text{angry}} = 1.58$, $M_{\text{fearful}} = 1.22$; $F(3, 99) = 148.07$, $p < .001$). Participants who were induced to feel angry had higher ratings of the Anger Index than did those in other conditions ($M_{\text{angry}} = 5.96$ vs. $M_{\text{happy}} = 1.10$, $M_{\text{hopeful}} = 1.33$, $M_{\text{fearful}} = 1.18$; $F(3, 99) = 152.81$, $p < .001$). Lastly, participants in the fearful condition reported they felt more fearful than did those in other emotion conditions ($M_{\text{fearful}} = 5.49$ vs. $M_{\text{happy}} = 1.23$, $M_{\text{hopeful}} = 1.47$, $M_{\text{angry}} = 2.24$; $F(3, 99) = 56.42$, $p < .001$). The emotion induction manipulation was effective.

Certainty & Valence. The effect of the recollection of personal experience was evaluated on Smith and Ellsworth's (1985) certainty and valence appraisal items. The first three certainty items were averaged to form a Certainty Index (Cronbach's $\alpha = .75$), and the two valence items were averaged to form a Valence Index (Cronbach's $\alpha = .91$).

A one-way ANOVA was run on the Certainty Index, and the result revealed significant differences among participants in the four emotion conditions ($F(3, 99) = 22.61, p < .001$). In particular, participants who were induced to feel happy ($M_{\text{happy}} = 5.55$) provided significantly higher ratings in the Certainty Index than did those induced to feel hopeful ($M_{\text{hopeful}} = 4.47$), angry ($M_{\text{angry}} = 4.21$), and fearful ($M_{\text{fearful}} = 3.14$) ($p < .01$). By contrast, participants induced to feel fearful had significantly lower ratings in the Certainty Index than did those in other conditions ($p < .01$), and their scores were only in the lower portion of the Certainty Index. However, the difference in the Certainty Index scores between participants in the angry and hopeful condition was not significant ($p > .8$).

A single-factor ANOVA on the Valence Index showed the predicted difference between positive and negative emotions ($F(3, 99) = 89.13, p < .001, M_{\text{happy}} = 6.15, M_{\text{hopeful}} = 5.18$ vs. $M_{\text{angry}} = 1.46, M_{\text{fearful}} = 1.42$). Subsequent contrast analysis showed that participants who were asked to recall happy events had higher ratings in the Valence Index than did those asked to recall hopeful events ($M_{\text{happy}} = 6.15$ vs. $M_{\text{hopeful}} = 5.18; p < .05$).

Product Attributes. The average rating scores for the superior nonalignable attributes (fingertip-controlled on/off switch and 23ft. automatic rewind cord) were significantly higher than the inferior nonalignable attributes (automatic height judgment, electronic dirt sensor) ($M_{\text{superior}} = 5.08$ vs. $M_{\text{inferior}} = 4.30$; $t(102) = 7.41, p < .01$). On the other hand, participants' rated the superior alignable attributes (2.5L dust collection capacity, HEPA multiple filter system) as more important than the inferior alignable attributes (2.25L, dust collection capacity, multiple filter system) ($M_{\text{superior}} = 5.06$ vs. $M_{\text{inferior}} = 4.63$; $t(102) = 3.66, p < .01$).

Hypothesis Testing

Ad Attitude. A 2 (ad claim type: superior alignable attributes vs. superior nonalignable attributes) x 4 (emotion: happiness, hope, anger, and fear) mixed-design ANOVA yielded a significant interaction between ad claim type and emotion ($F(3, 99) = 10.27, p < .01, \eta^2 = .24$). The results showed no significant differences between the emotional conditions in the attitudes toward the ad message for the Pura K380 ($F(3, 99) = 1.52, p > .2$). Participants in the happiness ($M_{\text{happiness}} = 6.59$), hope ($M_{\text{hope}} = 6.18$), anger ($M_{\text{anger}} = 6.22$), and fear ($M_{\text{fear}} = 6.03$) condition had similar ratings for the ad attitude measure for the Pura K380, which was better on the alignable attributes. For the Klenp K480's ad message focusing on better nonalignable attributes, participants in the fear ($M_{\text{fear}} = 7.46$) condition had significantly higher ratings of the ad attitude measure than did those in the happiness ($M_{\text{happiness}} = 5.93$), hope ($M_{\text{hope}} = 6.21$), and anger ($M_{\text{hope}} = 6.04$)

condition ($F(3, 99) = 13.60, p < .01, \eta^2 = .29$). These results partially supported the fourth hypothesis. Table 4.17 presents the cell means for the attitudes toward the two ads.

	Ad Attitude toward the Pura K380		Ad Attitude toward the Klenp K480	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Happiness (n=26)	6.59	1.05	5.93	0.94
Hope (n=24)	6.18	1.03	6.21	1.08
Anger (n=25)	6.22	0.78	6.04	1.21
Fear (n=28)	6.03	1.07	7.46	0.78

Table 4.17: Attitudes toward the Two Ads

Strength of Preference. In the analysis of strength of preference, I used only points allocated to the Klenp KC480, which was better on the nonalignable attributes than the Pura K380, because the points summed to 100. As explained earlier, high level construals lead individuals to compare nonalignable attributes between products and choose a nonalignable better option than an alignable better option (Malkoc, Zauberman, and Ulu, 2005). Extending this notion, it was expected that participants induced to feel emotion characterized by uncertainty appraisals (e.g., fear) would show greater preference for the Klenp KC480. A single-factor ANOVA on the strength of preference demonstrated a significant difference between emotional conditions ($F(3, 99) = 9.93, p < .01, \eta^2 = .23$). Subsequent contrast analysis revealed that participants in the fear condition indicated significantly higher ratings of preference for the Klenp KC480 than

did those in other condition ($M_{\text{fear}} = 57.46$ vs. $M_{\text{happiness}} = 41.50$, $p < .01$; $M_{\text{fear}} = 57.46$ vs. $M_{\text{hope}} = 47.00$, $p < .01$; $M_{\text{fear}} = 57.46$ vs. $M_{\text{anger}} = 45.68$, $p < .01$). Nonetheless, the preference scores for the Klenp KC480 among the happiness, hope, and anger group were not significantly different ($p > .5$). These results partially supported the fifth hypothesis

Discussion

The fourth study provides support for the prediction that people respond to the structural alignment of attributes differently when feeling certainty versus uncertainty related emotions. The results demonstrated that nonalignable attributes had a greater influence on participants' evaluations of advertising messages when they felt fearful rather than when they felt happy, hopeful, and angry. That is, the effects of structural alignment can be moderated by the certainty appraisal components of emotions.

As demonstrated in the previous experimental studies, the feeling of fear, which is significantly associated with uncertainty appraisal, caused individuals to represent objects and actions at a more high-level construal and to pursue desirable end states in terms of consumption goals. Further, the findings of Study 4 reveal that fear can lead individuals to increase their reliance on nonalignable attributes in spite of the difficulty of processing them relative to alignable attributes. This finding also implies that compared to fear, hope, which was found to be barely associated with uncertainty appraisal, did not show an increased reliance on nonalignable attributes. In addition, the results point to the limitations of the valence-based approach. In particular, individuals induced to feel angry

or fearful showed a different pattern with regard to their reliance on nonalignable attributes.

Chapter 5: Discussion and Conclusion

GENERAL DISCUSSION

The previous chapter presented the results for both the pretests and the four experimental studies. It focused on the quantitative results and illustrated how each hypothesis was either supported or not. This chapter concludes this discourse by discussing those results in light of the original research questions. In so doing it acknowledges this research's contributions to the discipline as well as managerial implications, admits the existing limitations of this dissertation study, and discusses future research opportunities.

The overarching objective of this research is to investigate how (and whether) discrete emotions exert an influence on mental construal levels, likelihood judgments, and responses to advertising messages beyond the valence-based framework. The central idea of this dissertation research is that the appraisal components of emotions, specifically certainty appraisals, could differentiate emotions of the same global valence and lead individuals to have different construal mindsets. Further, it was hypothesized that individuals induced to experience uncertainty related emotions would construe behaviors at a higher level rather than at a lower level, evaluate advertising messages focusing on desirability than feasibility more favorably, and prefer nonalignable better attributes to alignable better attributes in the context of competitive advertising. The reverse pattern was predicted for individuals induced to experience certainty related

emotions.

This research empirically explores the hypothesized effects of four different emotional states (i.e., happy, angry, hopeful, fearful) in online experimental settings. The results from Study 1 through Study 4 consistently indicate that happiness and fear are significantly more linked to certainty appraisals than anger and hope. Fear is strongly associated with the sense of uncertainty while happiness is connected to the sense of certainty. However, when people are induced to feel angry and hopeful, certainty appraisals are not strongly accessible compared to happiness and fear. This finding is in agreement with previous research studies postulating that the certainty appraisal content of anger and hope is less salient compared to that of happiness and fear (Frijda, Kuipers, ter Schure, 1989; Tesser, 1990). Further, it is worth noting that the certainty index scores of individuals in the angry and hopeful conditions converge to the value of four in the 7-point scales (Study 2, 3, & 4). Accordingly, it can be suggested that the sense of certainty (or uncertainty) is more involved with the feeling of specific emotions (e.g., happy, fearful) than other emotions (e.g., angry and hopeful).

The predicted effects of certainty (vs. uncertainty) related emotions on construal mindsets were captured on the BIF, which is as an effective instrument for measuring an individual's mental construal levels (Trope and Liberman, 2010). Individuals induced to feel fearful had higher BIF scores than those induced to feel happy, angry, and hopeful. The current research suggests that the feeling of fear leads people to construe behaviors at

a higher level rather than at a lower level. On the other hand, individuals had lower BIF scores when feeling happy than when feeling angry and hopeful. This finding provides support for the prediction that certainty-related emotion results in a lower-level construal mindset and, thus, leads individuals to represent behaviors at a lower construal level than at a higher construal level. The BIF scores between the anger and hope condition showed no significant difference. Thus, these findings suggest that certainty appraisal components of emotions can trigger an individual's mental construal at a higher or lower level.

Study 1 and Study 2 also examined the effect of four emotional states (i.e., happiness, anger, hope, fear) on likelihood judgments about negative, uncertain events. In accordance with the previous research by Lerner and Keltner (2001), the findings of this research indicates that individuals primed to feel fearful rate uncertain events as more likely to happen than do those primed to feel happy, angry, and hopeful. In addition, individuals induced to feel happy evaluate the uncertain events as less likely to occur relative to those induced to feel angry and hopeful.

These findings highlight how emotions with different certainty components influence likelihood judgments about uncertain events. From the perspective of construal level, uncertain events are psychologically more distant and are construed at a higher level than certain events (Trope and Liberman, 2010, Wakslak et al., 2006). Extending this notion, the current research demonstrates that individuals feeling emotions high on

certainty appraisals, like happiness, perceive uncertain events as psychologically more distant and as less likely to occur.

In line with the relationship between emotions and mental construal levels, Study 3 examined whether and how certainty (uncertainty) related emotions would exert an influence on individuals' responses to advertising messages framed at different construal levels. As previous research has shown (Lee, Keller, and Sternthal, 2010), construal levels were manipulated within the ad message by illustrating desirable end states at which consumers could arrive through using the advertised product (high-level construal) or by describing how consumers could use the feasible attributes which the advertised product would provide (low-level construal).

The results show that the effectiveness of advertising messages framed at different construal levels varies according to emotional states. In particular, individuals induced to feel fearful rated the ad message focusing on desirable end states as more effective than the ad message focusing on feasible attributes in terms of ad attitude, brand attitude, and purchase intent and features. Whereas, the reverse pattern held true for those induced to feel happy. Nevertheless, for individuals induced to feel angry and hopeful, these two different ad messages gave rise to no difference.

Accordingly, these results can be evidenced for the fit between certainty appraisals and mental construal levels. Feeling emotions with a high certainty component, individuals focus more on low-level and feasibility in pursuing imminent and proximal

goals. By contrast, individuals feeling emotions with a high uncertainty component focus more on high-level, desirable end-states than low-level, feasible attributes.

Study 4 explored the effects of how emotions characterized by certainty appraisals would have an impact on individuals' responses to advertising messages better on alignable versus nonalignable attributes. From the perspective of structural alignment theory (Zhang and Markman, 2001), when individuals compare the attributes of two products, in general, nonalignable attribute differences are more difficult to process than alignable attribute differences and show greater use of alignable differences. However, individuals with a high-level and abstract mindset rely more on nonalignable attribute differences than alignable attribute differences in making decisions (Malkoc, Zauberma, and Ulu, 2005). In agreement with this postulation, the results from Study 4 report that individuals induced to feel fearful show an increased reliance on nonalignable attributes and a shift in preference toward a product better on its nonalignable attributes in competitive advertising environments.

CONTRIBUTIONS

Theoretical Contributions

The present research is one of the first attempts to examine the effects of emotions on ad messages by recognizing the relationship between certainty appraisal and construal level. Further, this dissertation study contributes, on several fronts, to the existing

literature on consumer psychology and advertising. First, this dissertation research extends our knowledge about emotional effects by identifying the certainty appraisals of emotions as an important moderator of mental construal levels. Based on certainty appraisals, this research distinguishes between emotions that result in a higher-level construal mindset and emotions that result in a lower-level construal mindset. This classification provides a baseline understanding of the relationship between emotion and construal level. Consistent with Trope and Liberman's (2010) hypothesis, the findings of this research empirically ascertain that some emotions with a high uncertainty (certainty) component are more associated with higher-level (lower-level) mental construal than others.

This dissertation research not only affirms the importance of appraisal approaches but also points to the limitations of valence-based approaches in research on emotion. Research studies from a valence-based approach primarily assume that all negative and all positive emotions lead to similar effects on cognitive processing, judgment and decision-making. The drawback of the valence-based approach is to undermine the appraisal component of emotions and their congruent effects on subsequent cognitive processing and judgments (Bagozzi, Gopinath, and Nyer, 1999; Lerner and Kelter, 2001; Tiedens and Linton, 2001). Instead of contrasting the effects of positive versus negative emotion, the focus of this research is on the appraisal dimension of certainty. The current investigation demonstrates that emotions of the same global valence exert different influences due to certainty appraisal components. For instance, although fear and anger are both negative emotions, their emotional effects on mental construal levels, likelihood judgments, and responses to advertising messages are significantly different due to

certainty appraisal content.

Another noteworthy contribution of this dissertation research is to reveal an underlying mechanism that explains the effects of emotions on the processing of ad messages. Identifying the certainty appraisal component of emotions as a factor influencing mental construal levels, this research elucidates that uncertainty-related emotion causes individuals to put increased emphasis on high-level, desirable end states rather than low-level, feasible attributes in processing ad messages. The reverse pattern is also proposed for individuals experiencing certainty-related emotion.

By adopting the concepts of nonalignable and alignable attribute differences (Markman and Medin, 1995; Zhang and Markman, 1998), this dissertation research also reports systematic differences in the way people react to the advertising as a function of certainty appraisals distinguishing individuals' mental construal levels. Although individuals usually rely more on alignable attribute differences than nonalignable attribute differences in comparing products (Zhang, Kardes, and Cronley, 2002), the current investigation proposes that induction of uncertainty-related emotion attenuates common reliance on alignable attribute differences and increases the use of nonalignable attribute differences. That is, when a higher construal mindset is activated because of a sense of uncertainty, individuals show greater use of nonalignable differences in the context of competitive advertising.

The findings about the effects of emotions on likelihood judgments contribute to the literature on comparative optimism by suggesting that the common comparative optimism could be diminished due to the sense of uncertainty. Individuals have a

tendency to believe that they are more likely than others to experience good fortune and less likely to suffer harm (see Chambers, Windschitl, and Suls, 2003). The findings of this research suggest that the feeling of fear, which results in the sense of uncertainty, can impede common comparative optimism whereas the feeling of happiness bolsters comparative optimism compared to the feeling of anger and hope.

Managerial Implications

This dissertation research is also relevant to practitioners of advertising and marketing. By providing an understanding of emotional effects on the processing of ad messages, this research expands the scope of both strategic and tactical approaches to persuasion. From a managerial perspective, knowledge about the fit between emotion and construal level provides a guide for the construction of advertising messages and media plan. As media content affect the processing of ad messages by priming message recipients' cognitive and emotional states (Yi, 1990), the current research proposes that ad messages framed at a construal level consistent with one's emotional state primed by media content would enhance the effectiveness of the messages.

For instance, embedded in crime dramas (e.g., Hannibal, CSI, Criminal Minds), which stimulates the feeling of fear, TV commercials focusing on desirability can be significantly more effective than those focusing on the feasibility because the feeling of fear leads to a higher-level construal mindset; but, when placed in comedy shows, TV commercials concentrating on feasible attributes can be more persuasive than those

featuring desired end states. Given that consumers differently construe ad messages at a higher or lower level, depending on emotional states, advertisers should take into account the fit between their ad message and media content.

Further, the fit effect can be expended into the context of comparative advertising. Although alignable attribute differences are used more frequently to justify decisions (e.g., Markman and Median, 1995), as evidenced by the findings of this research, the feeling of fear and the sense of uncertainty could make a cognitive shift toward relying more on nonalignable attribute differences in the context of competitive advertising. Extending this suggestion, when comparative advertising messages involve nonalignable attributes, these messages could be more persuasive when embedded in media content inducing uncertainty-related emotions.

The insight gained from the present research also offers implications for developing advertising messages for products that are innately purchased in order to decrease the feeling of fear and uncertainty (e.g., health products, insurance services, security services) (Morales, Wu, and Fitzsimons, 2012). In particular, consumers who pay for any kind of insurance is proof that fear sells. The feeling of fear and uncertainty linked to purchasing these products might lead consumers to construe their consumption goals at a higher level. For these products, the greater persuasive impact of advertising messages might occur when the desirability of the advertised products are highlighted in the messages.

LIMITATIONS & FUTURE RESEARCH

As with most discovery-based investigations, this dissertation study has several limitations that need to be addressed. First, limitations include alternative appraisal dimensions of emotion, such as effort, control, and agency (Roseman, 1984; Scherer, 1988; Smith and Ellsworth, 1985). These other dimensions might also exert an influence on mental construal levels and ad message processing. Future research should examine other cognitive appraisal dimensions of emotions to explore the emotional effects on construal levels and related ad message processing. For example, the control (self vs. other) appraisal components of emotions may influence the perception of social distances associated with construal levels.

Although four emotional states were induced and their effects were examined in this research, other emotional states (e.g., worry, sadness, disgust, pride) might be an antecedent determining one's construal level and influencing subsequent cognitive processing. By exploring the effects of a wide array of emotion, future research could extend the generalizability of the findings of the current research.

Further, here only the effects of a single emotional state were taken into account, not examining the possibility and influence of mixed emotions. As shown in the experimental studies in the current research, emotion-induction materials (i.e. news stories) induced more than one specific emotion. For instance, experiencing fearful events, individuals might feel sad simultaneously. Therefore, different cognitive

appraisals could be accessible and be interactively involved with mixed emotions. It would be a meaningful research effort to scrutinize the effects of mixed emotions on subsequent cognitive processing.

The findings of this research are limited to the specific purchase contexts and advertising messages. Future research should investigate whether similar effects will occur across different types of contexts and communications (e.g., self-control, health communication, altruistic behavior).

From a methodological perspective, this dissertation research combined emotion-induction news stories with the recollection of emotion-related personal experiences to induce specific emotions. Researchers could consider other ways to induce emotional states more realistically. For instance, it would be interesting to explore the potential influence of ad-induced emotions. Another area for future research is the direct assessment of actual behavior, in addition to attitudes and behavioral intentions, the outcomes measured here. Future research is also needed to explore whether other individual difference (e.g., self view, regulatory focus, and personality trait) factors simultaneously influence the interaction effects of emotions and messages framed at different construal levels. At the very least, this dissertation research should serve as an empirical foundation for other investigations of emotion, construal level, and persuasive communication.

Appendix A: Emotion Induction Questions & Stimuli

1. Imagery Technique (Study 1)

Instructions:

I want you to think of a past situation or event where you felt most happy (hopeful, angry, fearful). Picture this situation in your mind.

Try and remember as vividly as you can what this past happy (hopeful, angry, fearful) situation was like: Think of what happened to make you feel so happy (hopeful, angry, fearful), and what it felt like to be happy (hopeful, disgusting, fearful) in this particular situation.

Please click the “>>” button below when you are ready and have this happy (hopeful, angry, fearful) situation in your mind, and I'll ask you questions about it.

Remember you will be telling a Vulcan, who has never had a happy (hopeful, angry, fearful) experience, what one was like.

Open-ended Questions:

- 1) Please describe this past happy (hopeful, angry, fearful) situation to me. What was it like to be happy in this situation?
- 2) What happened in this situation to make you feel happy (hopeful, angry, fearful)?
- 3) Why did these things make you feel happy (hopeful, disgusting, fearful)?
- 4) How did you know that you were happy (hopeful, angry, fearful) in this situation?
- 5) What did it feel like for you to be happy (hopeful, angry, fearful) in this situation?
- 6) What did you do in this situation where you were happy (hopeful, angry, fearful)?

2. Imagery Technique (Study 2-Study 4)

Instructions:

I'd like to ask you to think of two events where you felt most angry (happy, hopeful, fearful). Please picture these events in your mind.

Try and remember as truthfully as you can what these most angry (happy, hopeful, fearful) events were like. Think of what happened to make you feel so angry (happy, hopeful, fearful), and what it felt like to be angry (happy, hopeful, fearful) in these particular events.

Please click the ">>" button below when you are ready and have these two angry (happy, hopeful, fearful) events in your mind.

Open-ended Questions:

- 1) Please try and remember two events that made you feel most angry. Briefly describe these two events in your mind.
- 2) Among the events that you described on the previous page, please choose the one event that has made you most angry (happy, hopeful, fearful). Describe it in more detail.

3. Emotion-inducing News Stories: Batkid in San Francisco (Study 2-Study 4)

Our Hero! Batkid Saves the Day in San Francisco



Batkid is the superhero name of Miles Scott, a five-year-old kindergartner and cancer survivor who is currently in remission.

Miles, whose family lives in the Bay Area, has been battling leukemia since he was 2 years old, more than half his short life. He's in remission, and hopefully will stay that way.

Miles loves Batman, and his parents wrote to Make-A-Wish asking for them to help turn their son's fantasy of crime fighting into a reality - or as much of a reality as possible. Amazingly, the foundation took on the family's request, and with the help of social media, they were joined by thousands of volunteers and supporters who wanted to help make the little boy's dreams come true.

Miles, dressed in uniform as Batkid, spent the day on Friday, November 16 traveling throughout the city of San Francisco - we mean Gotham - stopping The Riddler and The Penguin as thousands of people cheered him on. He rode in a Batmobile, and was given a key to the city by the mayor.

Everyone was enchanted by Batkid, and helped the fiction become more and more real. President Obama gave a shout-out to the tiny superhero, and the U.S. Attorney's office even released a fake press release indicting The Riddler and The Penguin for kidnapping and conspiracy.

Several of the actors who have played the superhero on the big and small screen, including Michael Keaton, Adam West, Christian Bale, and soon-to-be-Batman Ben Affleck, have even expressed their support of Gotham's tiniest hero.

The plan was to give a little boy, one who had been through so much, a day of joy. Everyone who participated in Batkid's exploits, or watched them from the sidelines, on the livestream, or on Twitter (where #SFBatkid was a trending topic), was able to experience the same joy that comes when people come together to do something wonderful for someone else.

4: Emotion-inducing News Stories: Avery Walker over Leukemia (Study 2-Study 4)

Another Child in Leukemia Trials Ecstatic Over "Total Remission"



The seventh child to receive an experimental leukemia therapy at Children's Hospital of Philadelphia got good news last week: It worked.

"Avrey Walker is cancer free!!!! A total remission!" her father, Aaron, exulted on their Facebook page.

The 9-year-old from Redmond, Ore., was diagnosed at age 4 with acute lymphoblastic leukemia, a blood cancer that can be deadly within a few months if not treated.

Like other children in the study at Children's, Avrey had undergone years of intermittent chemotherapy, only to relapse each time the toxic treatments ended. She was one of the minority of children who do not respond to conventional treatments.

Aaron Walker and his wife, Christal, turned to Children's after reading about Emily Whitehead, the first child to receive the hospital's genetically engineered therapy, made using each patient's disease-fighting "T cells." Emily remains in remission, a year after treatment.

Avrey and her parents spent about 50 days in Philadelphia while her T cells were modified, multiplied, and, a month ago, returned to her bloodstream. The therapy involves transferring genes into T cells - the soldiers of the immune system - to make them recognize and attack B cells, the blood component that turns malignant in certain leukemias and lymphomas.

Still, the T-cell therapy is showing startling effectiveness, judging from both scientific and parental accounts: Of the first seven children, five had a complete response - no evidence of cancer - although one of them later relapsed. One child did not respond, and one child's outcome has not been made public by parents or doctors. Also, an adult leukemia patient treated with the T-cell therapy remains cancer-free two and a half years after treatment.

Children like Avrey have never known such a lengthy respite from disease, disability, and dread. Now, her father said, she wants to go back to fourth grade, play softball, hang out with her big sister, Madison.

"We'll try to get back to a normal life," he said, "something we haven't had for 10 years."

5. Emotion-inducing News Stories: Boston Marathon Bombings (Study 2-Study 4)

Explosions Rock Finish Of Boston Marathon; 8 Killed And Scores Injured



The terrorist attack, near the marathon's finish line, triggered widespread screaming and chaos, shattered windows and barricades and sent smoke billowing into the air at Copley Square.

With thousands of runners still on the course, two bombs exploded near the finish line of the Boston Marathon, killing 8 people, injuring at least 144 and turning the city's most celebrated event into a grisly spectacle of shattered glass, blood and screams.

At least 144 people were injured, with at least 17 of them in critical condition and 25 in serious condition. At least eight of the patients were children. Video from the scene showed two blasts about 20 seconds apart just off the course at the finish. White smoke rose, barriers flew, and throngs of people who had gathered to cheer the runners turned and fled in terror. They later reported seeing horrific injuries that included blown-off limbs and bodies thrown to the asphalt.

"All the sudden there was a massive boom. There was a sort of concussive blow that pushed a lot of people back. I could see runners falling in front of me," said Dave Abel, a reporter for The Boston Globe who was about 10 feet from one of the explosions.

"When the smoke started to clear, I could see lots of bodies," he said. "I could see one woman staring vacantly into the sky. I could see a lot of mangled limbs, a lot of blood and shattered glass. It was probably the most horrific thing I've ever seen." Larissa Brinkley, who came from Pennsylvania to run the race, said people dropped everything and ran the opposite way. Other witnesses described what at first sounded like a cannon blast or fireworks.

"Then it went off again. And then all of a sudden we heard people crying and running away," said Serghino Rene, who was a few blocks away. "It was a huge horde of people just running away."

The bombs that turned the Boston Marathon into a bloodbath were concocted from pressure cookers loaded with nails and ball bearings — killer devices favored by terrorists from New York to Afghanistan

Authorities in Boston found at least two more explosive devices that they were dismantling, Boston Police Commissioner Ed Davis said. One unexploded device was found at a hotel on Boylston Street near the bomb site and another unexploded device was found at an undisclosed location,

Keating, a Democrat and member of the House Homeland Security Committee, said. He called the bombing a "sophisticated, coordinated, planned attack."

6. Emotion-inducing News Stories: Breivik & His Complaints (Study 2-Study 4)

Norway's Mass Murderer Breivik Threatens Hunger Strike for Better Video Games



Convicted Norwegian mass-killer Anders Behring Breivik has threatened to go on hunger strike unless he gets access to better video games, a sofa and a larger gym. On July 22, 2011, Breivik, a far-right fanatic, killed 8 people in a bomb attack outside a government building in Oslo and later killed a further 69, most of them teenagers, when he opened fire at a youth camp on the island of Utoeya.

In the letter, which has a threatening tone, Breivik enclosed a typed list of 12 demands sent to prison authorities. The demands include better conditions for his daily walk and the right to communicate more freely with the outside world, which he argues are in line with European rights legislation.

He also demanded the replacement of a PlayStation 2 games console for a more recent PS3 "with access to more adult games that I get to choose myself" as well as a sofa or armchair instead of a "painful" chair. "I only have the right to play less interesting kids games. One example is "Rayman Revolution", a game aimed at three year olds," wrote the 35-year-old convicted killer.

Held apart from other prisoners since 2011 for security reasons, Breivik argues that he has the right to a wider "selection of activities" than other inmates to compensate for his strict isolation. Breivik also wants his standard weekly allowance of 300 kroner (\$A55) to be doubled, particularly to cover his postal charges from written correspondence.

Other demands include an end to daily physical searches, and access to a PC rather than to a "worthless typewriter with technology dating back to 1873". "You've put me in hell ... and I won't manage to survive that long. You are killing me," he wrote to prison authorities, threatening a hunger strike and further right-wing extremist violence.

"If I die, all of Europe's right-wing extremists will know exactly who it was that tortured me to death ... That could have consequences for certain individuals in the short term but also when Norway is once again ruled by a fascist regime in 13 to 40 years from now," he warned, calling himself a "political prisoner".

In the letter dated January 29 he said that since there has not been any real improvement in his prison conditions, a hunger strike would be "one of the only" options at his disposal. "The hunger strike won't end until the Minister of Justice (Anders) Anundsen and the head of the KDI (the Norwegian Correctional Services) stop treating me worse than an animal," he said, adding that he would "soon" make public the starting date of his protest action.

He also refers to himself as a "human rights activist." "You seem to think that we -- all human rights activists who fight for one fundamental human right (cultural self-determination) -- ... are Nazi monsters who should be pushed into suicide," he wrote. Karl Hillesland, acting director of the prison where he is being held, told that no one is currently on hunger strike there.

7. Manipulation Check Items (Pleasant & Certainty Appraisal)

Next, please answer additional questions below based your past situation or event you felt described in the previous page.

1. How well did you understand what was happening around you in this situation?
 2. How well could you predict what was going to happen next in this situation?
 3. How uncertain were you about what was happening in this situation?
 4. How unpleasant was it to be in the situation you wrote about in this situation?
 5. How enjoyable was it to be in the situation you wrote about in this situation?
-

* 11-point scale: 1. Not at all/ 11. Extremely (Study 1)

* 7-point scale: 1. Not at all/ 7. Extremely (Study 2-4)

Appendix B: Measurement Scales for Study 1-4

1. The Behavior Identification Form (Vallacher and Wegner 1989)

We would like to know how you think about certain behaviors. Any behavior can be identified in many ways. For example, one person might describe a behavior as “typing a paper”, while another might describe the behavior as “pushing keys”. Yet another person might describe the behavior as “expressing thoughts”.

We are interested in your **FIRST IMPRESSION** as to what different behaviors mean to you. In the next page, you will find a list of behaviors and two different ways in which the behavior might be identified. Please select the one that best describes the behavior for you. There are no right or wrong answers. For example:

- 1). Attending class
 - a. Sitting in a chair
 - b. Looking at a teacher

- 1) Making a list
 - a. Getting organized/ b. Writing things down
- 2) Reading
 - a. Following lines of print/ b. Gaining knowledge
- 3) Washing clothes
 - a. Removing odors from clothes/b. Putting clothes into the machine
- 4) Measuring a room for carpeting
 - a. Getting ready to remodel/ b. Using a yardstick
- 5) Cleaning the house
 - a. Showing one's cleanliness/ b. Vacuuming the floor
- 6) Painting a room
 - a. Applying brush strokes/ b. Making the room look fresh
- 7) Paying the rent
 - a. Maintaining a place to live/ b. Writing a check

- 8) Caring for houseplants
 - a. Watering plants/ b. Making the room look nice
- 9) Locking a door
 - a. Putting a key in the lock/ b. Securing the house
- 10) Filling out a personality test
 - a. Answering questions/ b. Revealing what you're like
- 11) Brushing teeth
 - a. Preventing tooth decay/ b. Moving a brush a round in one's mouth
- 12) Taking a test
 - a. Answering questions/ b. Showing one's knowledge
- 13) Greeting someone
 - a. Saying hello/ b. Showing friendliness
- 14) Resisting temptation
 - a. Saying "no"/ b. Showing moral courage
- 15) Eating
 - a. Getting nutrition/ b. Chewing and swallowing
- 16) Traveling by car
 - a. Following a map/ b. Seeing countryside
- 17) Having a cavity filled
 - a. Protecting your teeth/ b. Going to the dentist
- 18) Talking to a child
 - a. Teaching a child something/ b. Using simple words
- 19) Pushing a doorbell
 - a. Moving a finger/ b. Seeing if someone's home

3. Likelihood Estimates for Uncertain Events (Study 2)

Instructions:

We are interested in the fact that there are some life events that many people perceive to be very certain and likely. However, there are other events that many people perceive to be uncertain and unlikely, such as earthquakes. Compared to other individuals-the same sex and age as you-what do you think are the chances that the following events will happen to you?

Compared to the average person-the same sex and age as you, how likely is it that you will

- 1) Catch flu when supposed to be on vacation

Very
Unlikely ____ : ____ : ____ : ____ : ____ : ____ : ____ Very
Likely

- 2) Develop a stomach ulcer

Very
Unlikely ____ : ____ : ____ : ____ : ____ : ____ : ____ Very
Likely

- 3) Develop an excruciating toothache

Very
Unlikely ____ : ____ : ____ : ____ : ____ : ____ : ____ Very
Likely

- 4) Develop arthritis

Very
Unlikely ____ : ____ : ____ : ____ : ____ : ____ : ____ Very
Likely

* 7-point scale

4. Manipulation Check: High- and Low-level Construal Ad (Study 3)

On the scales below, please indicate the extent to which you agree or disagree with each of the following statements.

1. The ad message emphasizes the desired effects which the A40's users expect by using it.

Strongly Disagree _____ : _____ : _____ : _____ : _____ : _____ : _____ Strongly Agree

2. The ad message emphasizes the functional features with which the A40 provides its users.

Strongly Disagree _____ : _____ : _____ : _____ : _____ : _____ : _____ Strongly Agree

3. The ad focuses more on the ideas about the benefits the A40's buyers achieve by using it.

Strongly Disagree _____ : _____ : _____ : _____ : _____ : _____ : _____ Strongly Agree

4. The ad focuses more on the ideas about the features A40's buyers use while doing a workout on it.

Strongly Disagree _____ : _____ : _____ : _____ : _____ : _____ : _____ Strongly Agree

5. Attitudes toward Ad (Study 3)

How do you feel about the ad message for the Trackstar A40?

Bad	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Good
Ineffective	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Effective
Not Informative	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Informative
Not Persuasive	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Persuasive

6. Attitudes toward the Brand (Study 3)

Overall, how do you feel about the Trekstar A40 as an elliptical trainer?

Bad	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Good
Not Attractive	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Attractive
Undesirable	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Desirable
Unfavorable	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Favorable

7. Purchase Intention (Study 3)

How likely would you be to purchase the Trekstar A40 if you were in the market for elliptical trainers?

Unlikely	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Likely
Uncertain	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Certain
Impossible	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Possible

8. Product Involvement (Study 3)

On the scales below, please indicate the extent to which you agree or disagree with each of the following statements.

1. I have a lot of experience with elliptical trainers.

Strongly Disagree _____ : _____ : _____ : _____ : _____ : _____ : _____ Strongly Agree

2. Elliptical trainers matter a lot to me.

Strongly Disagree _____ : _____ : _____ : _____ : _____ : _____ : _____ Strongly Agree

3. I get bored when other people talk to me about elliptical trainers.

Strongly Disagree _____ : _____ : _____ : _____ : _____ : _____ : _____ Strongly Agree

9. Product Knowledge (Study 3)

On the scales below, please indicate the extent to which you agree or disagree with each of the following statements.

1. I have a lot of experience with elliptical trainers

Strongly Disagree _____ : _____ : _____ : _____ : _____ : _____ : _____ Strongly Agree

2. As compared to the average person, I would say that I am highly knowledgeable about elliptical trainers.

Strongly Disagree _____ : _____ : _____ : _____ : _____ : _____ : _____ Strongly Agree

3. I would describe myself as being very familiar with elliptical trainers.

Strongly Disagree _____ : _____ : _____ : _____ : _____ : _____ : _____ Strongly Agree

10. Attitudes toward Ad (Study 4)

How do you feel about the ad message for the Pura K380 (Klenp KC480)?

Bad	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Good
Ineffective	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Effective
Not Informative	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Informative
Not Persuasive	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Persuasive

11. Strength of Preference (Study 4)

Please indicate your preference for the two vacuum cleaners based on the features in the ads by allocating 100 points between them (e.g., 20:80, 50:50, 70:30, 63:37).

Klenp KC 480 : _____

Pura K380 : _____

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